PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)	
22 January 2001 (22.01.01)	
International application No.	**Applicant's or agent's file reference**
PCT/SE00/01249	B153-006/PC
International filing date (day/month/year)	**Priority date** (day/month/year)
14 June 2000 (14.06.00)	14 June 1999 (14.06.99)

Applicant

POTTHOFF, Klaus

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

02 November 2000 (02.11.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer R. E. Stoffel
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)* B153-006/PC

Box No. I TITLE OF INVENTION Manöveranordning för portar och liknande

Apparatus for operating gates and the like

Box No. II APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

POTTHOFF, Klaus
Storgatan 17
S-352 31 Växjö

[x] This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State *(that is, country)* of nationality: Sweden

State *(that is, country)* of residence: Sweden

This person is applicant for the purposes of: [x] all designated States [ ] all designated States except the United States of America [ ] the United States of America only [ ] the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:

[ ] applicant only

[ ] applicant and inventor

[ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of: [ ] all designated States [ ] all designated States except the United States of America [ ] the United States of America only [ ] the States indicated in the Supplemental Box

[ ] Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: [x] agent [ ] common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

H. Siebmanns,
GOTAPATENT AB
Box 154
S-561 22 Huskvarna
Sweden

Telephone No. +46-36-130211

Facsimile No. +46-36-145126

Teleprinter No.

[ ] **Address for correspondence:** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked)*:

Regional Patent

- ☒ AP **ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA **Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP **European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA **OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT *(if other kind of protection or treatment desired, specify on dotted line)* .....

National Patent *(if other kind of protection or treatment desired, specify on dotted line)*:

- ☒ AE United Arab Emirates
- ☒ AL Albania
- ☒ AM Armenia
- ☒ AT Austria
- ☒ AU Australia
- ☒ AZ Azerbaijan
- ☒ BA Bosnia and Herzegovina
- ☒ BB Barbados
- ☒ BG Bulgaria
- ☒ BR Brazil
- ☒ BY Belarus
- ☒ CA Canada
- ☒ CH and LI Switzerland and Liechtenstein
- ☒ CN China
- ☒ CR Costa Rica
- ☒ CU Cuba
- ☒ CZ Czech Republic
- ☒ DE Germany
- ☒ DK Denmark
- ☒ DM Dominica
- ☒ EE Estonia
- ☒ ES Spain
- ☒ FI Finland
- ☒ GB United Kingdom
- ☒ GD Grenada
- ☒ GE Georgia
- ☒ GH Ghana
- ☒ GM Gambia
- ☒ HR Croatia
- ☒ HU Hungary
- ☒ ID Indonesia
- ☒ IL Israel
- ☒ IN India
- ☒ IS Iceland
- ☒ JP Japan
- ☒ KE Kenya
- ☒ KG Kyrgyzstan
- ☒ KP Democratic People's Republic of Korea
- ☒ KR Republic of Korea
- ☒ KZ Kazakhstan
- ☒ LC Saint Lucia
- ☒ LK Sri Lanka
- ☒ LR Liberia
- ☒ LS Lesotho
- ☒ LT Lithuania
- ☒ LU Luxembourg
- ☒ LV Latvia
- ☒ MA Morocco
- ☒ MD Republic of Moldova
- ☒ MG Madagascar
- ☒ MK The former Yugoslav Republic of Macedonia
- ☒ MN Mongolia
- ☒ MW Malawi
- ☒ MX Mexico
- ☒ NO Norway
- ☒ NZ New Zealand
- ☒ PL Poland
- ☒ PT Portugal
- ☒ RO Romania
- ☒ RU Russian Federation
- ☒ SD Sudan
- ☒ SE Sweden
- ☒ SG Singapore
- ☒ SI Slovenia
- ☒ SK Slovakia
- ☒ SL Sierra Leone
- ☒ TJ Tajikistan
- ☒ TM Turkmenistan
- ☒ TR Turkey
- ☒ TT Trinidad and Tobago
- ☒ TZ United Republic of Tanzania
- ☒ UA Ukraine
- ☒ UG Uganda
- ☒ US United States of America
- ☒ UZ Uzbekistan
- ☒ VN Viet Nam
- ☒ YU Yugoslavia
- ☒ ZA South Africa
- ☒ ZW Zimbabwe

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

- ☐ AG Antigua and Barbuda
- ☐ DZ ALGERIA
- ☐ MZ Mozambique

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)*

Box No. VI PRIORITY CLAIM ☐ Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is: national application: country	regional application:* regional Office	international application: receiving Office
item (1) 14.06.1999	9902237-8	Sweden		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): 1

** Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.*

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used)* : ISA /

Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority):*

Date *(day/month/year)* Number Country *(or regional Office)*

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following **number of sheets:**

request	:	3
description (excluding sequence listing part)	:	6
claims	:	4
abstract	:	1
drawings	:	6
sequence listing part of description	:	
Total number of sheets	:	20

This international application is **accompanied by** the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☒ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other *(specify)*:

Figure of the drawings which should accompany the abstract:

Language of filing of the international application:

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Huskvarna 2000-06-14 0-RECEIPT KINDLY REQUESTED!

(H. Siebmanns)

For receiving Office use only

1. Date of actual receipt of the purported international application:
2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
4. Date of timely receipt of the required corrections under PCT Article 11(2):
5. International Searching Authority (if two or more are competent): ISA /
6. ☐ Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Gotapatent AB
H. Siebmanns
Box 154
S-561 22 HUSKVARNA

PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	27-09-2001
Applicant's or agent's file reference B153-006/PC	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/SE00/01249	14-06-2000	14-06-1999

Applicant
Potthoff, Klaus

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in som Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary axamination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/
Patent- och registreringsverket
Box 5055
S-102 42 STOCKHOLM
Facsimile No. 08-667 72 88

Telex
17978
PATOREG-S

Authorized officer
STAFFAN RENNERMALM

Telephone No. 08-782 25 00

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREA

REC'D 05 OCT 2001
WIPO PCT

14

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
B153-006/PC		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/SE00/01249	14.06.2000	14.06.1999
International Patent Classification (IPC) or national classification and IPC7		
E05F 13/00, E05F 13/04		
Applicant		
Potthoff, Klaus		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
02.11.2000	18.09.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Telex 17978 PATOREG-S
Authorized officer Christer Wendneius / MRo Telephone No. 08-782 25 00	

Form PCT/IPEA/409 (cover sheet) (January 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/SE00/01249

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed

☐ the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement) under article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☒ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

national application No.
PCT/SE00/01249

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-13	YES
	Claims		NO
Inventive step (IS)	Claims	1-13	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Cited documents:

1. US 4115954
2. GB 2322669
3. EP 0571305
4. FR 2765921

The documents cited in the International Search Report represent background art.

The invention defined in claims 1-13 is not disclosed by any of these documents.

None of the cited documents gives any indication towards the claimed apparatus for operating one or several gates or the like. No relevant combination of the cited documents would lead a person skilled in the art to the invention defined in the claims.

Therefore, the invention defined in claims 1-13 is novel and is considered to involve an inventive step. It is also considered to be industrially applicable.

PATENT COOPERATION TREA

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:
SIEBMANNS, H.
Gotapatent AB
Box 154
S-561 22 Huskvarna
SUÈDE

Date of mailing (day/month/year) 21 December 2000 (21.12.00)	
Applicant's or agent's file reference B153-006/PC	**IMPORTANT NOTICE**

International application No.	**International filing date** (day/month/year)	**Priority date** (day/month/year)
PCT/SE00/01249	14 June 2000 (14.06.00)	14 June 1999 (14.06.99)

Applicant
POTTHOFF, Klaus

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
   AG,AU,DZ,KP,KR,MZ,US

   In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
   AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,
   GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,
   NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW
   The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
   21 December 2000 (21.12.00) under No. WO 00/77334

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, **a demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer
J. Zahra

Telephone No. (41-22) 338.83.38

RECORD COPY

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No. PCT/SE 00 / 01249

International Filing Date 14-06-2000

The Swedish Patent Office
PCT International Application

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)* B153-006/PC

Box No. I TITLE OF INVENTION ~~Manöveranordning för portar och liknande~~

Apparatus for operating gates and the like

Box No. II APPLICANT

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

POTTHOFF, Klaus
Storgatan 17
S-352 31 Växjö

Sweden

[x] This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State *(that is, country)* of nationality: Sweden

State *(that is, country)* of residence: Sweden

This person is applicant for the purposes of: [x] all designated States [ ] all designated States except the United States of America [ ] the United States of America only [ ] the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:

[ ] applicant only

[ ] applicant and inventor

[ ] inventor only *(If this check-box is marked, do not fill in below.)*

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of: [ ] all designated States [ ] all designated States except the United States of America [ ] the United States of America only [ ] the States indicated in the Supplemental Box

[ ] Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below ~~is hereby~~/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: [x] agent [ ] common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

H. Siebmanns,
GOTAPATENT AB
Box 154
S-561 22 Huskvarna
Sweden

Telephone No. +46-36-130211

Facsimile No. +46-36-145126

Teleprinter No.

[ ] **Address for correspondence:** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked)*:

Regional Patent

- ☒ AP **ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA **Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP **European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA **OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT *(if other kind of protection or treatment desired, specify on dotted line)* .....

National Patent *(if other kind of protection or treatment desired, specify on dotted line)*:

- ☒ AE United Arab Emirates
- ☒ AL Albania
- ☒ AM Armenia
- ☒ AT Austria
- ☒ AU Australia
- ☒ AZ Azerbaijan
- ☒ BA Bosnia and Herzegovina
- ☒ BB Barbados
- ☒ BG Bulgaria
- ☒ BR Brazil
- ☒ BY Belarus
- ☒ CA Canada
- ☒ CH and LI Switzerland and Liechtenstein
- ☒ CN China
- ☒ CR Costa Rica
- ☒ CU Cuba
- ☒ CZ Czech Republic
- ☒ DE Germany
- ☒ DK Denmark
- ☒ DM Dominica
- ☒ EE Estonia
- ☒ ES Spain
- ☒ FI Finland
- ☒ GB United Kingdom
- ☒ GD Grenada
- ☒ GE Georgia
- ☒ GH Ghana
- ☒ GM Gambia
- ☒ HR Croatia
- ☒ HU Hungary
- ☒ ID Indonesia
- ☒ IL Israel
- ☒ IN India
- ☒ IS Iceland
- ☒ JP Japan
- ☒ KE Kenya
- ☒ KG Kyrgyzstan
- ☒ KP Democratic People's Republic of Korea
- ☒ KR Republic of Korea
- ☒ KZ Kazakhstan
- ☒ LC Saint Lucia
- ☒ LK Sri Lanka
- ☒ LR Liberia
- ☒ LS Lesotho
- ☒ LT Lithuania
- ☒ LU Luxembourg
- ☒ LV Latvia
- ☒ MA Morocco
- ☒ MD Republic of Moldova
- ☒ MG Madagascar
- ☒ MK The former Yugoslav Republic of Macedonia
- ☒ MN Mongolia
- ☒ MW Malawi
- ☒ MX Mexico
- ☒ NO Norway
- ☒ NZ New Zealand
- ☒ PL Poland
- ☒ PT Portugal
- ☒ RO Romania
- ☒ RU Russian Federation
- ☒ SD Sudan
- ☒ SE Sweden
- ☒ SG Singapore
- ☒ SI Slovenia
- ☒ SK Slovakia
- ☒ SL Sierra Leone
- ☒ TJ Tajikistan
- ☒ TM Turkmenistan
- ☒ TR Turkey
- ☒ TT Trinidad and Tobago
- ☒ TZ United Republic of Tanzania
- ☒ UA Ukraine
- ☒ UG Uganda
- ☒ US United States of America
- ☒ UZ Uzbekistan
- ☒ VN Viet Nam
- ☒ YU Yugoslavia
- ☒ ZA South Africa
- ☒ ZW Zimbabwe

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

- ☐ AG Antigua and Barbuda
- ☐ DZ ALGERIA
- ☐ MZ Mozambique

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)*

PCT/SE00/01249

14.06.2000

Box No. VI PRIORITY CLAIM ☐ Further priority claims are indicated in the Supplemental Box.

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is: national application: country	regional application:* regional Office	international application: receiving Office
item (1) 14 JUNE 99 14.06.1999	9902237-8	Sweden		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): 1

** Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.*

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used)* :

ISA / SE

Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority)*:

Date *(day/month/year)* Number Country *(or regional Office)*

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following **number of sheets**:

request	:	3
description (excluding sequence listing part)	:	6
claims	:	4
abstract	:	1
drawings	:	6
sequence listing part of description	:	
Total number of sheets	:	20

This international application is **accompanied by** the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☒ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other *(specify)*:

Figure of the drawings which should accompany the abstract:

Language of filing of the international application:

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Huskvarna 2000-06-14 O-RECEIPT KINDLY REQUESTED!

(H. Siebmanns)

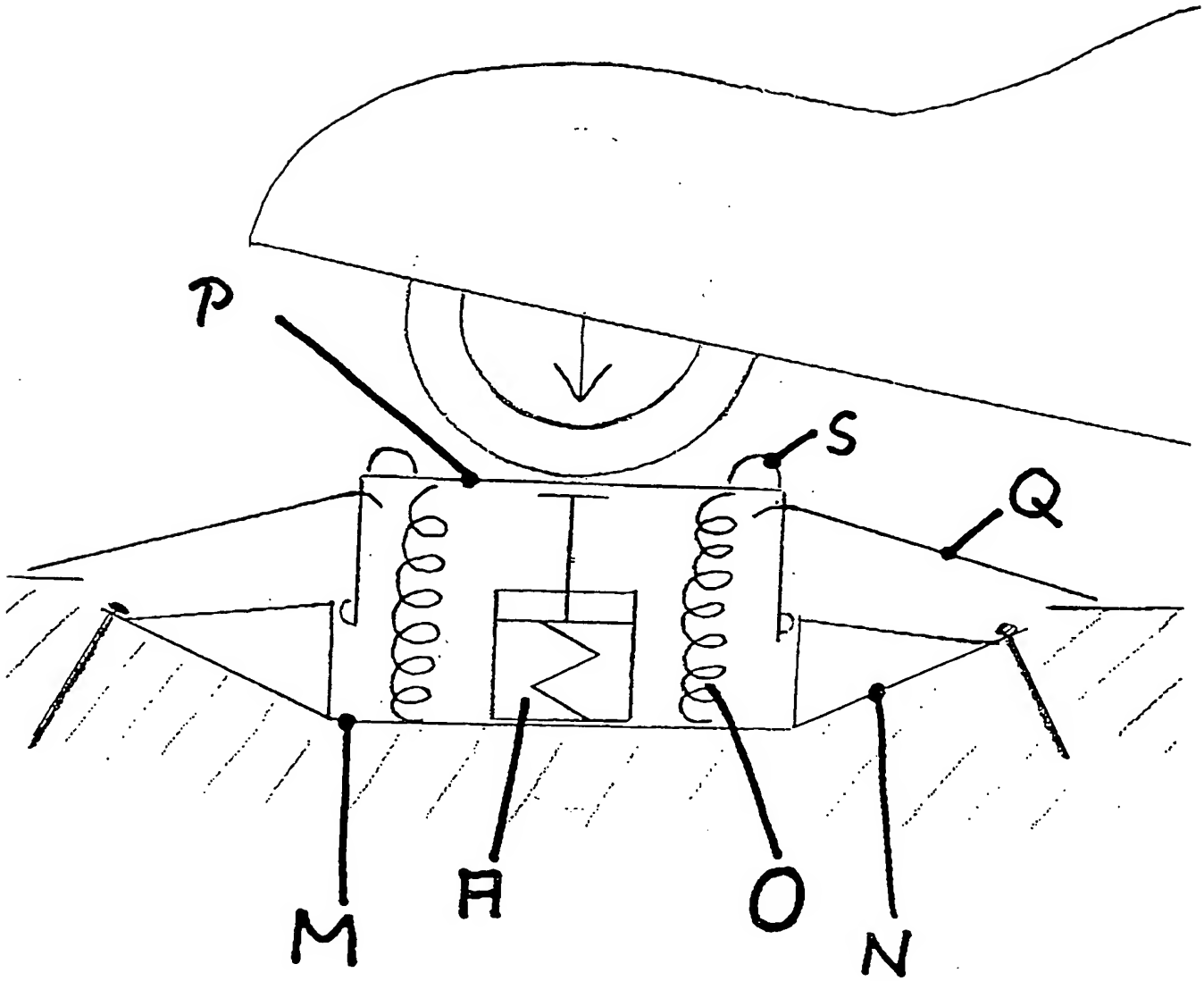
For receiving Office use only

1. Date of actual receipt of the purported international application: 14-06-2000
2. Drawings: ☒ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
4. Date of timely receipt of the required corrections under PCT Article 11(2):
5. International Searching Authority (if two or more are competent): ISA / SE
6. ☐ Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau: 27 JULY 2000 (27.07.00)

Fig 1



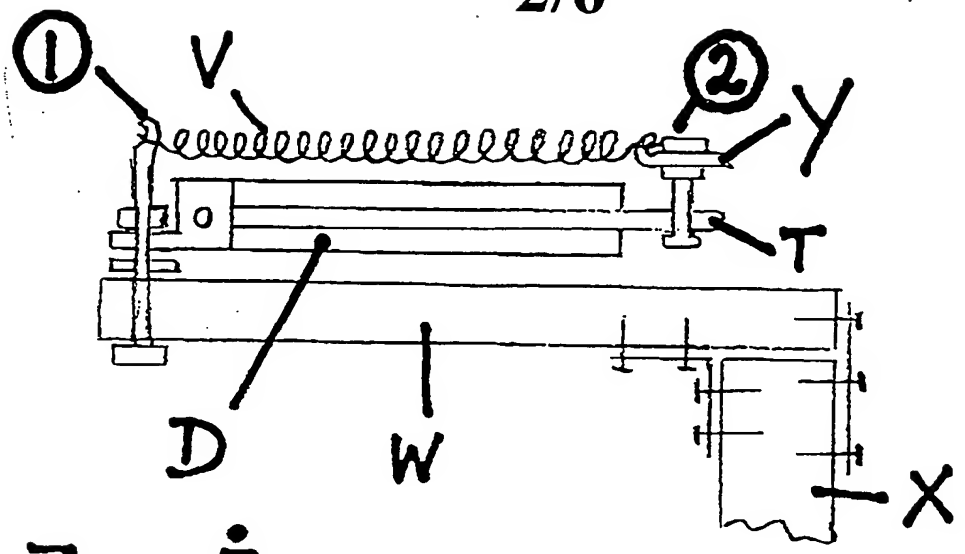


Fig 2

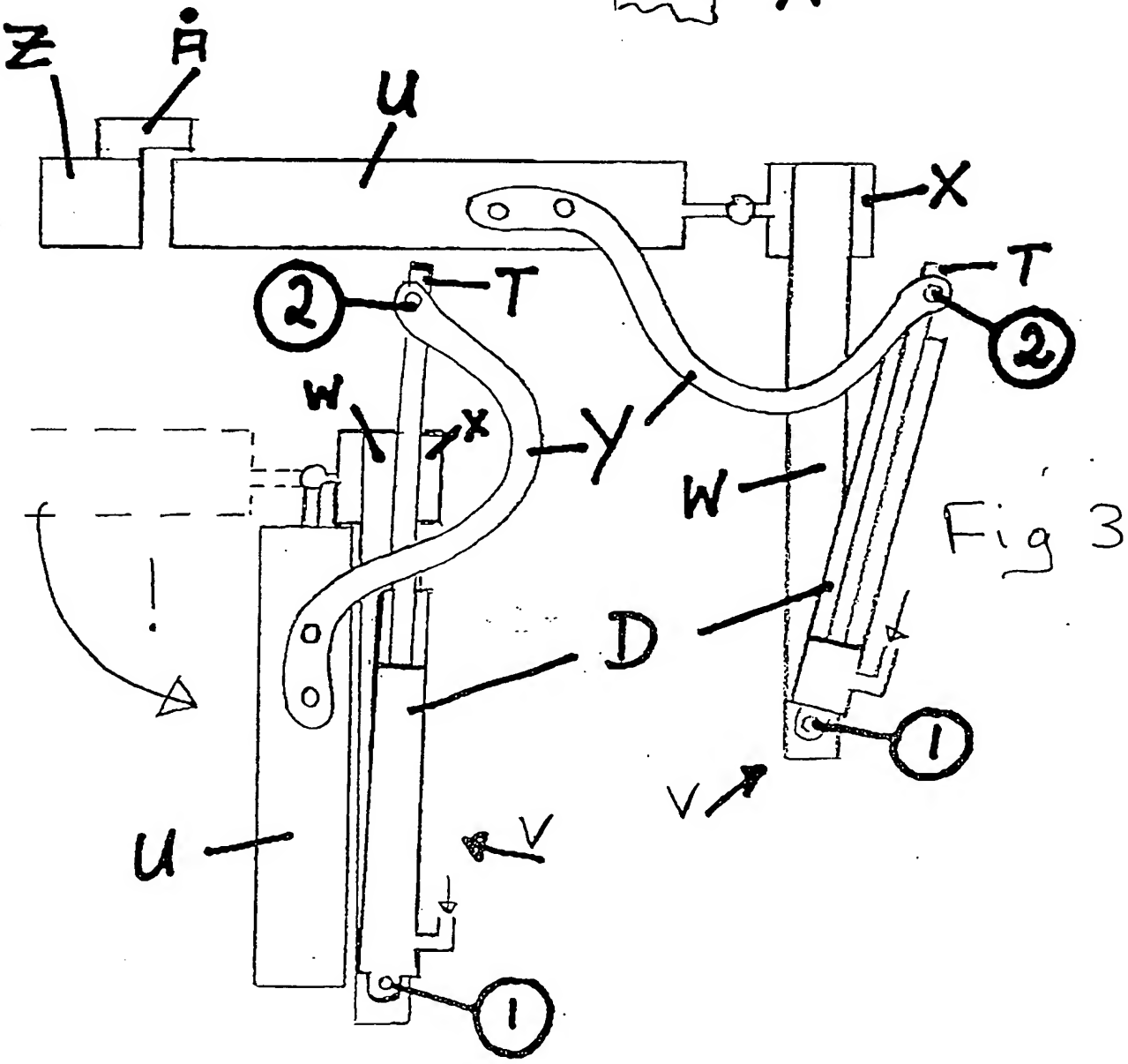


Fig 3

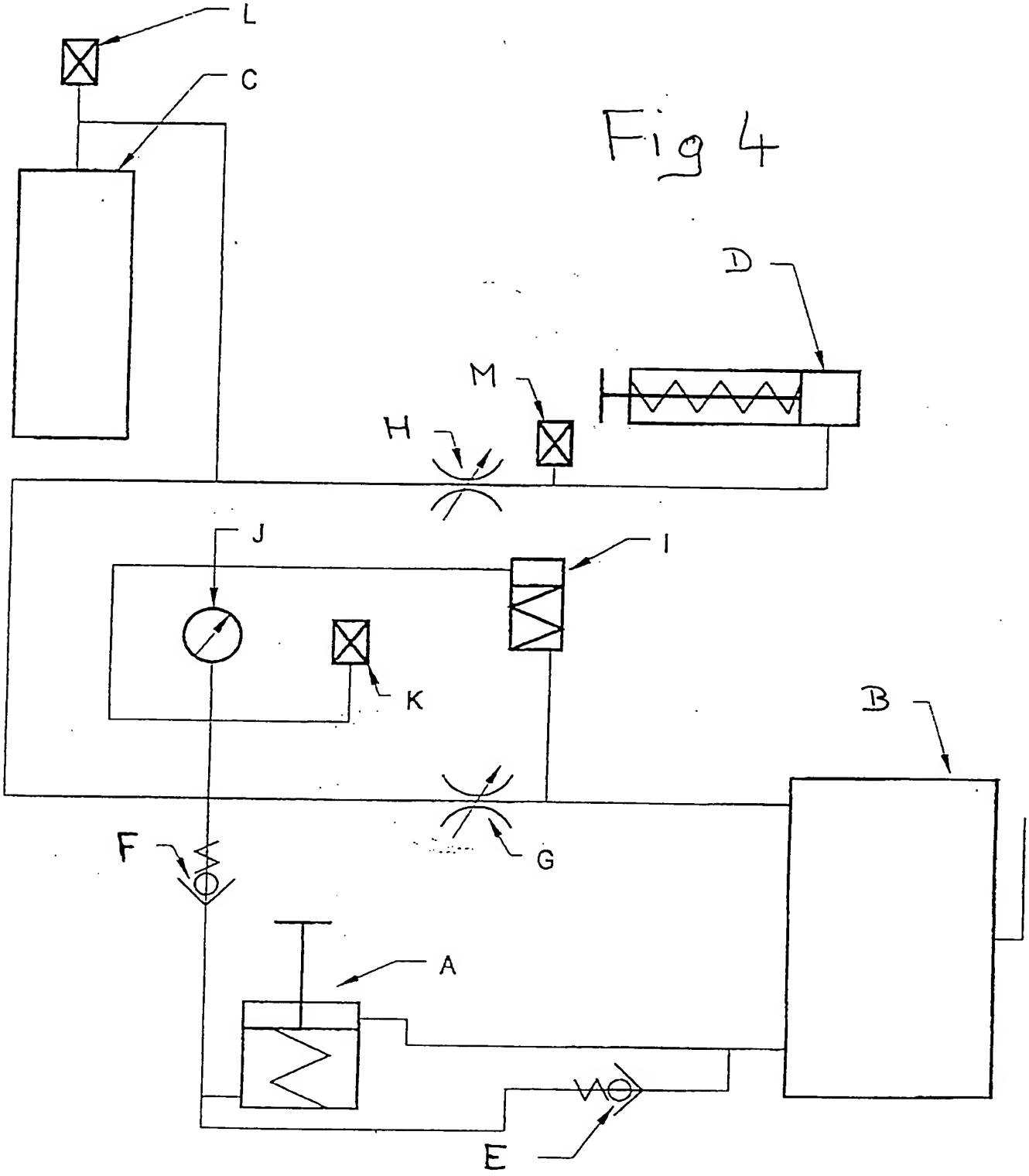


Fig 4

Fig 5

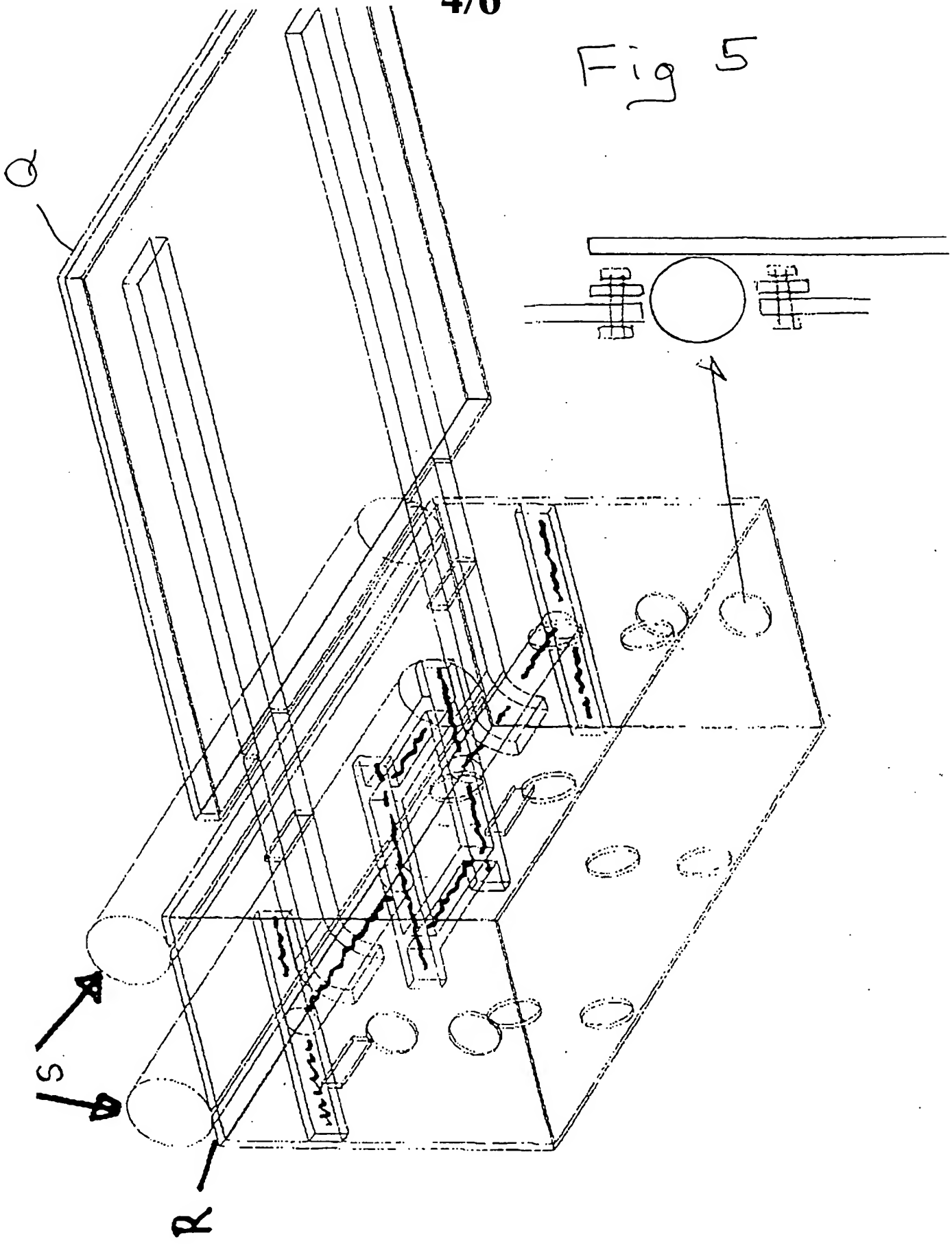
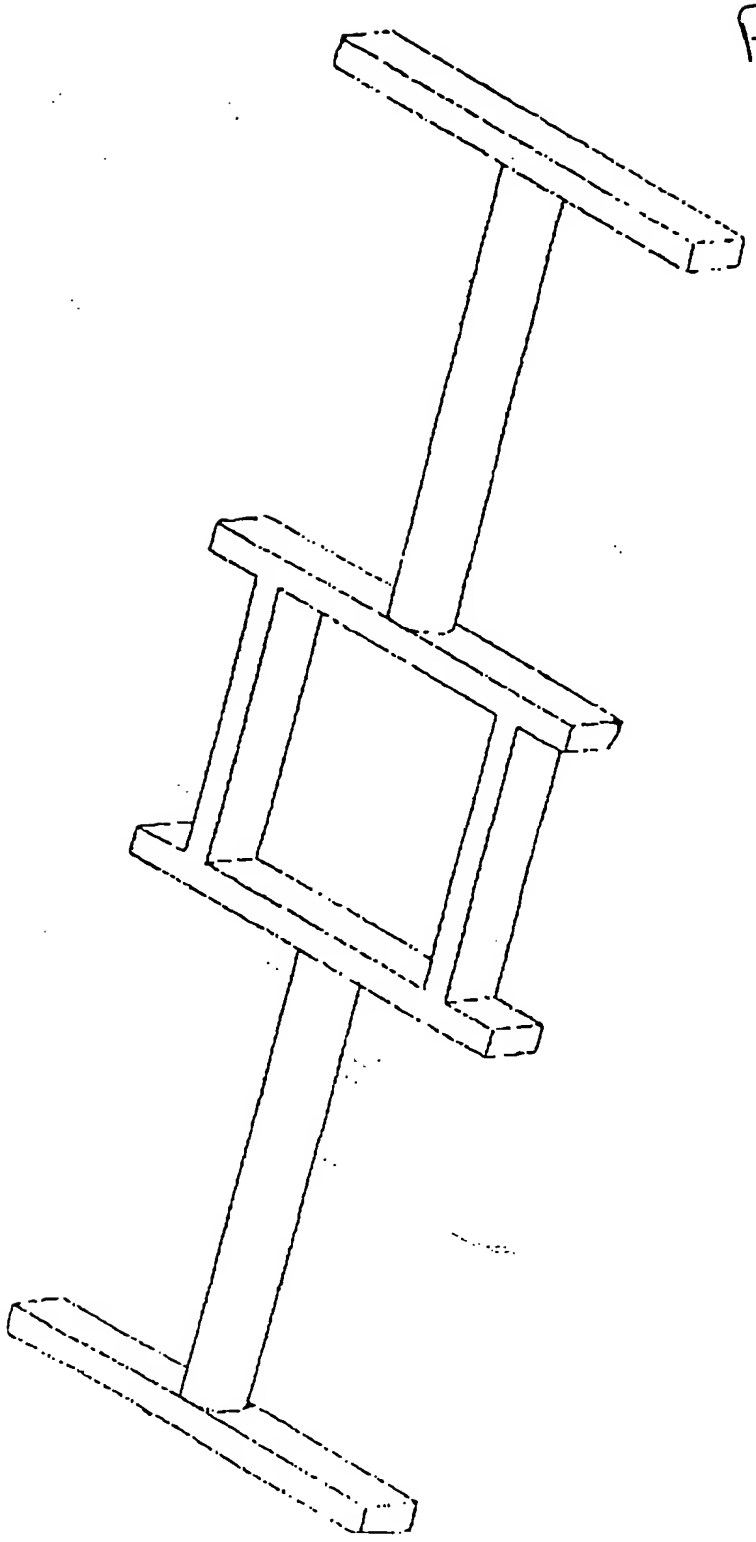


Fig 6



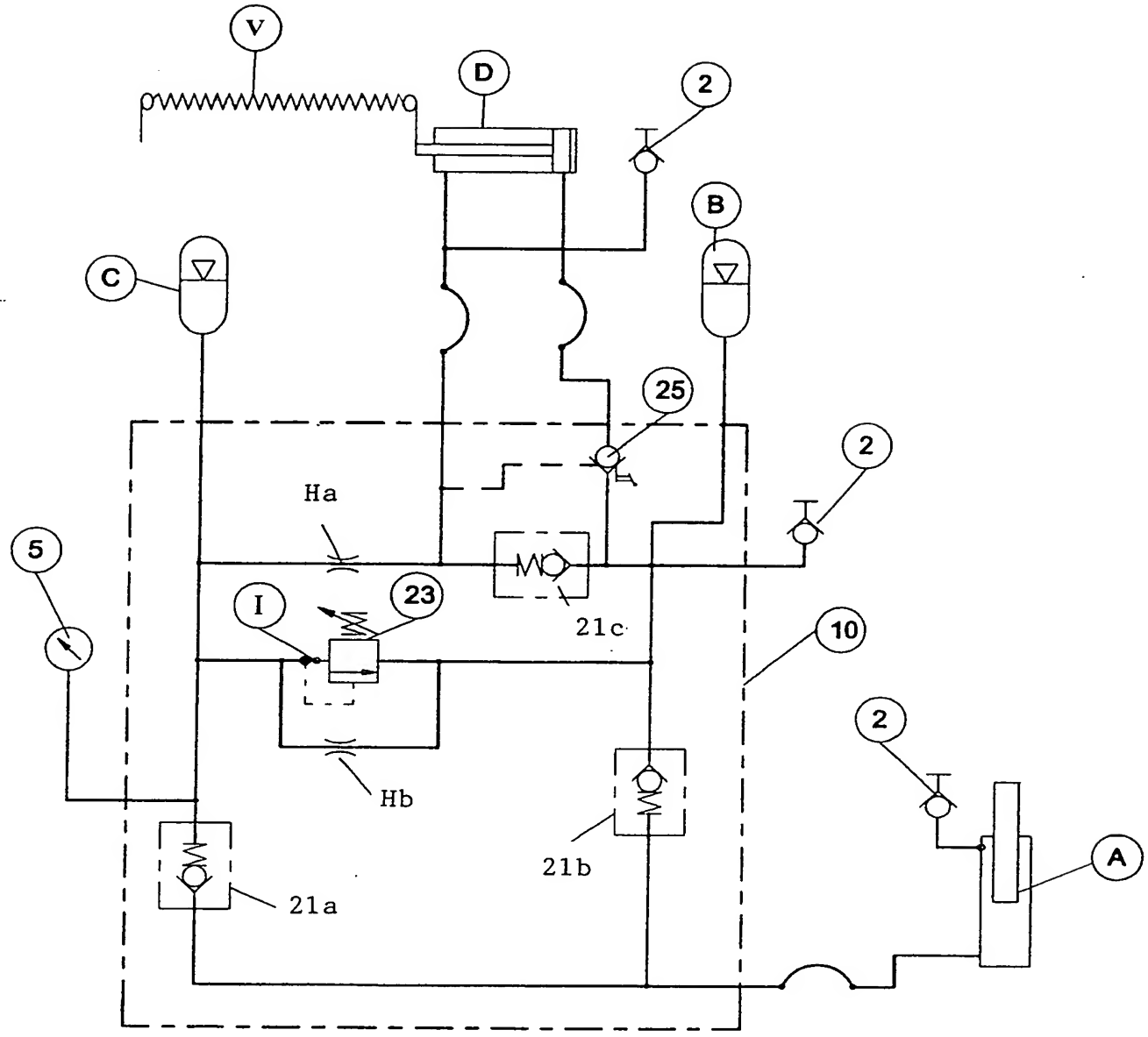


FIG 7

PCT/SE00/01249
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MANÖVERANORDNING FÖR PORTAR OCH LIKNANDE

~~APPARATUS FOR OPERATING GATES AND THE LIKE~~

Föreliggande uppfinning avser en manöveranordning för portar och liknande, vilken anordning är närmare angiven i ingressen till patentkravet 1.

Dylika manöveranordningar finner främst användning på platser utan tillgång till elektricitet, exempelvis för öppnande och stängande av portar i viltstängsel och stängsel för avgränsning av betesmarker. Anordningarna har till uppgift att vid ankomsten av ett fordon till närområdet på endera sidan av porten automatiskt öppna den senare och efter en viss tid, när fordonet har passerat portöppningen, åter stänga porten.

Exempel på tidigare framlagda förslag till dylika manöveranordningar framgår av GB-A-2 322 669, US-A-4 115 954 och AU-A1-65 309/80.

Dessa kända lösningar vidlåder olika brister, varför de aldrig har fått någon genomslagskraft på marknaden. Ingen av dessa publikationer uppfyller ett större antal olika krav i kombination, vilket är en förutsättning för en mera allmän användbarhet, då det knappast är försvarbart att i större utsträckning än ytterst undantagsvis behöva reparera, serva och ersätta sådana anordningar, vilka således i kombination skall uppfylla följande krav:

Mycket långtgående om inte fullständig underhållsfrihet; oberoende av tillgång till elektrisk ström, solceller, motorer, bränsle, tryckluftsaggregat mm; funktion i praktiskt taget alla klimatzoner, t ex från -30°C till +60°C; absolut pålitlighet och mycket stor livslängd; öppnande och stängande av porten utan att en person i det anländande resp passerande fordonet behöver lämna detsamma; selektiv påverkbarhet enbart genom fordon, särskilt bilar, och ej genom t ex människor, vilt eller boskap; klanderfri funktion vid t ex lätta personbilar och tunga lastbilar; utan komplicerade och dyra särskilda medel lätt inställbara öppnings-, öppethållande- och stängningstider; mjuka stängningsförlopp; ljudlöshet; möjlighet till modulbyggnad för enkel tillverkning och montering; monteringsmöjlighet på befintliga konstruktioner, t ex stolpar, och med användning av befintliga portar.

Syftet med föreliggande uppfinning är att särskilt i ovannämnda hänseenden i kombination förbättra och vidareutveckla på området tidigare känd teknik.

Detta syftemål förverkligas enligt uppfinningen genom att en manöveranordning av det inledningsvis omnämnda slaget i huvudsak är så beskaffad, som anges i den kännetecknande delen av patentkravet 1.

Ytterligare kännetecken av och fördelar med uppfinningen framgår av följande beskrivning under hänvisning till bifogade ritningar, som på ett schematiserat sätt i ej begränsande exempelform visar en föredragen utföringsform av uppfinningen. I detalj föreställer:

Fig 1 en sidovy av en i en manöveranordning enligt uppfinningen ingående tryckgivarenhet påverkad av en anländande personbil,

Fig 2 en sidovy av en i anordningen enligt uppfinningen ingående svängmekanism,

Fig 3 mekanism enligt fig 2 sedd uppifrån,

Fig 4 ett kopplingsschema till ett hydrauliskt kretslopp ingående i anordningen enligt uppfinningen,

Fig 5 en perspektivvy uppifrån av ett föredraget utförande av en manöveranordning enligt uppfinningen,

Fig 6 en perspektivvy av en i fig 5 ingående detalj; och

Fig 7 ett alternativt kopplingsschema liknande det i fig 4 visade.

Medan det principiellt är tänkbart, att en anordning enligt uppfinningen är så koncipierad, att porten, som även kan bestå av två halvor, alltid öppnar horisontellt i riktning bort från ett anländande fordon oavsett från vilken sida det kommer, så visas och beskrives här endast det mer praktiska fallet av en port, som går mot ett stopp i eller vid portöppningen och således alltid öppnar och stänger åt samma håll med t ex öppningsrörelsen i riktning mot ett inhägnat område. Om därför vilt eller boskap trycker mot porten, så hindrar stoppet den från att öppna.

Det är givetvis också tänkbart, att porten resp portdelarna öppnar vertikalt, och/eller att vikmekanismer används.

Vidare är det tänkbart, att anordningen enligt uppfinningen inbegriper en låsmekanism, som låser porten i stängningsläge, och som upphävs i en inledande fas av öppningsrörelsen, exempelvis genom att en låskolv är inkopplad i nämnda hydrauliska kretslopp.

En i fig 1 visad tryckgivarenhet är normalt anordnad på vardera sidan av en port U på och/eller i marken. Enheten innefattar en stationär yttre låda M med tillhörande spindelben N, som ger ökad stabilitet genom förankring i marken medelst förankringsbultar eller liknande. Inuti den uppåt öppna yttre lådan är teleskopliknande anordnad en uppochnedvänd, vertikalt rörlig inre låda P, varvid tryckfjädrar O sträcker sig mellan de båda lådbottnarna. Vidare sträcker sig mellan lådbottnarna en eller flera hydrauliska tryckcylindrar A innehållande en frostfri vätska, t ex vatten och glykol, som problemlöst fungerar mellan -30°C och +60°C. Nämnda hydrauliska cylindrar kan vara fastsatta på den stationära

lådans botten, medan deras kolvar kan pressa mot insidan av den rörliga lådans botten, på vars ovansida lämpligen finns trösklar S, som kännbart indikerar och säkrar påkörningsläget. Vid exempelvis den övre/inre lådan nära dess botten ledbart fästa rampplåtar Q kan leda till nämnda ovansida.

Det hydrauliska kretsloppet förklaras med hänvisning till fig 4. Vid körning av exempelvis en bils högra framhjul på en tryckgivarenhet utövas genom bilens tyngd mot verkan av återställningsfjädrarna O ett tryck på cylindrarna A, som är adekvat för att pressa hydraulvätska genom t ex underhållsfria plastledningar dels till en ackumulatortank C, som ackumulerar en del av kraften som övertryck, och dels till en sekundär öppningscylinder D, som via sin kolvstång T öppnar porten U mot verkan av kraften av en stängningsfjäder V. Övertrycket i vätskan släpps genast ut via en slang till en expansionstank B. Utsläppet sker via en strypventil G och är så långsamt, att det får effekt först efter det att bilen har passerat och övertrycket i expansionstanken börjat minska. En i ledningen till öppningscylindern D inbyggd strypventil H ger en mjuk öppning av porten och svarar för att överskottstryckvätska leds till ackumulatortanken C.

Eventuella trycktoppar från mycket tunga bilar resp andra och tredje axeln på bilen släpps direkt via en övertrycksventil I tillbaka till expansionstanken. Eftersom denna ventil dock först öppnar vid 10 bar, så hindrar den icke det vanliga öppningsförloppet och den vanliga långsamma stängningen, utan tar enbart hand om eventuella övertryck, t ex från flera axlar eller tunga fordon, som annars skulle spräcka systemet.

Det vanliga arbetstrycket i systemet ligger på 5 - 6 bar, vilket åstadkommer full öppning av porten mot kraften från stängningsfjädern V.

Den sekundära öppningscylindern D är monterad på en hållare W, som i sin tur monteras på t ex en befintlig stängselstolpe X på ett svängbart sätt, vilket medför, att den under öppnings- resp stängningsförloppet själv finner rätt vinkel i förhållande till en kraftarm Y. Cylindern D ligger i ett plan ovanför hållaren W och kraftarmen Y ligger i sin tur i ett plan ovanför cylindern D, vilket medför att öppningscylindern kan röra sig fritt i förhållande till hållaren W, medan kraftarmen kan röra sig fritt i förhållande till öppningscylindern D. Kraftarmen Y är lämpligen formad som en bumerang för att inte kollidera med stolpen X. Den går runt stolpen, vilket även underlättar monteringen.

Porten U stängs mot den andra befintliga stolpen Z med ett anhåll eller stopp Å. När porten öppnats och bilen har lämnat tryckgivarenheten, så pressar fjädrarna O den inre lådan tillbaka till det övre utgångsläget. Därmed uppstår ett undertryck i den primära tryckcylindern, som därför suger tillbaka vätska från expansionstanken. Därmed är den primära cylindern redo att starta om hela cykeln. I den se-

kundära cylindern avtar trycket, eftersom vätska släpps tillbaka till expansionstanken via en strypventil G. Därmed gör sig stängningsfjädern gällande och stänger porten långsamt, eftersom vätska måste pressas ut ur den sekundära öppningscylindern och via strypventilen tillbaka till ackumulatortanken.

I fig 4 åskådliggör dessutom L en luftare i ledningsgrenen till ackumulatortanken C, M en luftare i ledningsgrenen till öppningscylindern D, E och F backventiler i två ledningsgrenar från tryckcylinderns A trycksida, J en efter backventilen F i grenen inkopplad manometer och K en till samma gren ansluten luftare.

Hela tryckgivarenheten är med fördel kapslad. Nedåt kan kapslingen bestå av armerad plastväv, vilket medger, att man bara behöver lägga ut den i stället för att använda sig av en betydligt dyrare, formsprutad låda av lämplig, åldringsbeständig plast, vilket naturligtvis också är en möjlighet. Upptill kan tryckgivarenheten vara belagd med stålnärsarmerad gummimatta, som dels tätar mot fukt och smuts och dels tål tiotusentals körningar.

Den yttre fasta metallådan är försedd med fyra spindelben, som uppvisar hål i sina yttersta hörn. Genom dessa hål inför man antingen långa bultar, som fästes i urberget, eller långa skruvar, som förankras i pluggar eller liknande i lösare underlag.

Eftersom kraften vid påkörning av den lösa inre metallådan dels innehåller en rakt nedåtriktad komponent och dels en i bilens färdriktning parallellt med marken framåtriktad komponent, så gäller det att eliminera den sistnämnda skevande kraften, som primärt riskerar att tippa den lösa lådan.

En lösning på detta problem är följande: Man förser den lösa lådan med ett antal rullager, som enbart medger en vertikal rörelse inuti den fasta lådan. Alternativt kan väljas kullager eller bara teflonbeskiktade ytor, som emellertid kan medföra nedsmutsnings- och kärvningsproblem, eller expanderskenor. Genom den valda lösningen konverteras all kraft från bilen i vertikalled, varigenom erhålles ett maximalt kraftutbyte för påverkan av hydraulsystemet.

En särskild fördel med det i fig 5 och 6 visade utförandet erhålles genom att nedpressningen av den inre lådan redan vid påkörning på den rörligt i lådan införda rampen underlättas. Rampen är infäst på ett sådant sätt, att dess infästning mot den lösa lådan förblir på samma punkt räknat i bilens färdriktning, medan rampens slutdel rör sig en liten sträcka baklänges i bilens färdriktning i och med att den lösa lådan trycks ned och rampen ligger mera parallell mot underlaget.

Tryckgivarenheten utföres lämpligen som en första modul, som via två plastslangar dels överför arbetstrycket till den sekundära öppningscylindern och dels återför hydraulvätska från expansionstanken till den primära tryckcylindern, när undertryck uppstår i denna, då bilen lämnat tryckgivarenheten och den inre lådan trycks uppåt av återställfjädrarna.

Ackumulatortank, tryckmätare, strypventiler, övertrycksventil och tillhörande kopplingar och anslutningar utföres lämpligen som en andra modul, som kan placeras i en låda (ej visad), som kan fästas vid en portstolpe e dyl.

Den sekundära öppningscylindern med sin hållare, fjäder och kraftarm kan slutligen bilda en tredje modul, som med fördel monteras på en befintlig stolpe för att manövrera en befintlig port, varigenom väsentliga kostnadsbesparingar kan göras.

Modulerna kan vara färdigt fabriksmonterade, fyllda med t ex glykol för användningsregioner, där frost kan förekomma. I annat fall räcker vatten. Modulerna kopplas ihop och luft släpps ut via luftningsnipplar. Därefter installeras tryckgivaren i marken och hela anordningen är färdig att användas.

På skissen i fig 7 föreställer, förutom de redan beskrivna symbolerna, 2 tre stn mät-/avluftningspunkter, 5 en manometer, 21 tre backventiler, 23 en tryckbegränsningsventil och 25 en manuell öppningsventil.

Denna anordning fungerar på följande sätt, varvid godtyckliga detaljer givetvis kan tillämpas på den tidigare beskrivna och i övriga figurer visade anordningen:

1. Stängd port

Kolvstången i cylinder D är uttryckt pga grundtryck i ackumulator B plus kraften från fjädern V. Kolvstången i cylinder A är uttryckt pga grundtryck i ackumulator B. Porten är hydrauliskt låst via ventil 25, som är en pilotstyrd backventil.

2. Manuell öppning

Ventilen 25 kan öppnas manuellt medelst en spak. Då strömmar vid portöppning vätska dels via backventilen 21c till minussidan på cylindern D, dels pga utjämning av differentialarean till ackumulator B. (Differentialarean är skillnaden på arean pga att kolvstången tar area på minussidan). Efter manuell öppning stängs porten automatiskt pga att det råder samma tryck på båda sidor om kolven i cylindern D, men det är kraften från fjädern V och areaskillnaden i cylinder D, som åstadkommer stängningen.

Vid manuell öppning laddas den kraft, som behövs för automatisk stängning. Den manuella öppningen kan således upprepas ett valfritt antal gånger.

3. Automatisk öppning

Vid påkörning av cylinder A går tryck och flöde via backventil 21a. Porten börjar öppna via strypningen Ha. Effekten laddas i ackumulator C. Samtidigt börjar tryck och flöde avta via strypning Hb. Härvid bör observeras, att Ha är så mycket större än Hb, att helöppning av porten hinner ske och finns kvar en viss tid, innan avtappningen får effekt. Samtidigt som porten öppnar, går cylindern D i minusläge (kolvstången dras in), varvid hydraulmediet på cylinderns plussida tillsammans med ackumulator B fyller cylindern A. Pilotventilen 25 hålles härvid öppen av trycket från minussidan.

4. Överbelastningsskydd

Ventilen 23 öppnar vid tryck över 10 bar. Upprepad belastning av cylindern A innan funktionscykeln slutförts leder således till att överskottstryck och –vätska töms via ventilen 23. I förhållande till den tidigare visade och beskrivna konstruktionen erhålles nu automatisk hydraulisk låsning av porten. I stället för (eller ev vid sidan av) en fjäder används det hydrauliska tryck, som alstras i rampen. Dessutom är en hydraulisk ledning mellan porten och rampen tillfyllest.

Uppfinningen är inte begränsad till ovan beskrivna och på bifogade ritningar visade utföranden, utan kan modifieras och kompletteras på godtyckligt sätt inom ramen för uppfinningstanken och följande patentkrav. Således kan, som nämnts, anordningen användas i samband med en pivothängd port, som utför en vridande rörelse, eller en port, som glider i skenor i en rak eller krökt bana. I stället för portar kan man även tänka sig behållare, vars innehåll skall tömmas på t ex flaket till en lastbil. Genom att utnyttja en bils framförande och tyngd kan man med fördel använda sig av den beskrivna och visade anordningen för att åstadkomma en eljest endast på motordrivet eller manuellt sätt genomförbar öppnings-, stängnings-, lastnings-, tippnings- eller liknande manöver.

Patentkrav

1. Manöveranordning för en eller flera portar e dyl (U), innefattande en i eller på marken placerbar och med minst en hydraulisk cylinder (A) samt återställfjädrar (O) försedd tryckgivarenhet, som är anordnad att via ett hydrauliskt kretsloppsystem påverka en öppnings- och stängningsmekanism för en port e dyl, **kännetecknad därav, att** nämnda cylinder (A) är utformad som primär tryckcylinder, som hydraulmässigt är förbunden med dels en ackumulatortank (C), som är avsedd att ackumulera en del av kraften som övertryck, och dels en sekundär öppningscylinder (D), som är anordnad att öppna porten (U) mot kraften av en stängningsfjäder (V), att övertrycket i vätskan är avsett att släppas ut via en ledning till en expansionstank (B) via en strypventil (H), som är anordnad att fördröja utsläppningsförloppet så, att det får effekt först efter det att exempelvis en bil har passerat anordningen och porten och övertrycket i expanionstanken börjat minska, och att eventuella trycktoppar från t ex mycket tunga bilar resp andra och tredje axeln på en bil är avsedda att släppas direkt via en övertrycksventil (I) tillbaka till expansionstanken.

2. Manöveranordning enligt patentkravet 1, **kännetecknad därav, att** anordningen inbegriper en låsmekanism, som är avsedd att låsa porten i stängningsläge och att upphävas i en inledande fas av öppningsrörelsen, särskilt genom att en låskolv är inkopplad i nämnda hydrauliska kretslopp.

3. Manöveranordning enligt patentkravet 1, **kännetecknad därav, att** en tryckgivarenhet normalt är anordnad på vardera sidan av en port (U) på och/eller i marken, och/eller att den innefattar en stationär yttre låda (M) med tillhörande spindelben (N), som ger ökad stabilitet genom förankring i marken medelst förankringsbultar eller liknande, att inuti den uppåt öppna yttre lådan teleskopliknande är anordnad en uppochnedvänd, vertikalt rörlig inre låda (P), varvid tryckfjädrar (O) sträcker sig mellan de båda lådbottnarna, och att mellan lådbottnarna sträcker sig en eller flera hydrauliska tryckcylindrar (A) innehållande en frostfri vätska, t ex vatten och glykol för att fungera mellan –30°C och +60°C.

4. Manöveranordning enligt patentkravet 3, **kännetecknad därav, att** nämnda hydrauliska cylindrar är fastsatta på den stationära lådans botten, medan deras kolvar är avsedda att pressa mot insidan av den rörliga lådans botten, på vars ovansida lämpligen finns trösklar (S) avsedda att kännbart indikera och säkra påkörningsläget, och att vid exempelvis den övre/inre lådan nära dess botten ledbart är fästa rampplåtar (Q), som är avsedda att leda till nämnda ovansida.

5. Manöveranordning enligt något av patentkraven 1 – 4, **kännetecknad därav, att** den sekundära öppningscylindern (D) är monterad på en hållare (W), som i sin tur är monterad på t ex en befintlig stängselstolpe (X) på ett svängbart sätt till att under öppnings- resp stängningsförloppet själv finna rätt vinkel i förhållande till en kraftarm (Y), att cylindern (D) ligger i ett plan ovanför hållaren (W) och kraftarmen (Y) i sin tur ligger i ett plan ovanför cylindern (D), så att öppningscylindern kan röra sig fritt i förhållande till hållaren (W), medan kraftarmen kan röra sig fritt i förhållande till öppningscylindern (D), och att kraftarmen (Y) lämpligen är formad som en bumerang för att inte kollidera med stolpen (X), varvid den är avsedd att gå runt stolpen till att även underlätta monteringen.

6. Manöveranordning enligt något av patentkraven 3 – 5, **kännetecknad därav, att** porten (U) är avsedd att stängas mot den andra befintliga stolpen (Z) med ett anhåll eller stopp (Å), så att när porten öppnats och exempelvis en bil har lämnat tryckgivarenheten, fjädrarna (O) är avsedda att pressa den inre lådan tillbaka till det övre utgångsläget och till att bilda ett undertryck i den primära tryckcylindern, som är avsedd att suga tillbaka vätska från expansionstanken, så att den primära cylindern är redo att starta om hela cykeln och i den sekundära cylindern trycket är avsett att avtaga genom att vätska släpps tillbaka till expansionstanken via en strypventil (G), så att stängningsfjädern kan göra sig gällande och stänga porten långsamt genom att vätska pressas ut ur den sekundära öppningscylindern och via strypventilen tillbaka till ackumulatortanken.

7. Manöveranordning enligt något av patentkraven 1 – 6, **kännetecknad av** en luftare (L) i ledningsgrenen till ackumulatortanken (C), en luftare (M) i ledningsgrenen till öppningscylindern (D), backventiler (E och F) i två ledningsgrenar från tryckcylinderns (A) trycksida, en efter backventilen (F) i grenen inkopplad manometer (J) och en till samma gren ansluten luftare (K).

8. Manöveranordning enligt något av patentkraven 3 – 7, **kännetecknad därav, att** hela tryckgivarenheten är kapslad, varvid kapslingen nedåt består av armerad plastväv till att medgiva, att den bara behöver läggas ut, och att tryckgivarenheten upptill är belagd med stålnätsarmerad gummimatta till att dels täta mot fukt och smuts och dels tåla tiotusentals på- och frånkörningar, och/eller att den yttre fasta metallådan är försedd med fyra spindelben, som uppvisar hål i sina yttersta hörn, genom vilka hål är avsedda att införas långa bultar, vilka är avsedda att fästas i marken, eller långa skruvar, som är avsedda att förankras i pluggar eller liknande i lösare underlag.

9. Manöveranordning enligt något av patentkraven 3 – 8, **kännetecknad därav, att** den rörliga lådan är försedd med ett antal rullager, som enbart medger vertikala rörelser inuti den fasta lådan, eller att det finns kullager eller bara teflonbeskiktade ytor, och/eller att nedpressningen

av den inre lådan är avsedd att underlättas genom påkörning på den rörligt i lådan införda rampen, vilken är infäst på ett sådant sätt, att dess infästning mot den lösa lådan förblir på samma punkt räknat i bilens färdriktning, medan rampens slutdel rör sig en liten sträcka baklänges relativt bilens färdriktning och med att den lösa lådan trycks ned och rampen ligger mera parallell mot underlaget.

10. Manöveranordning enligt något av patentkraven 1 – 10, **kännetecknad därav, att** tryckgivarenheten är utförd som en första modul, som via två plastslangar dels överför arbetstrycket till den sekundära öppningscylindern och dels återför hydraulvätska från expansionstanken till den primära tryckcylindern, när undertryck uppstår i denna, då en bil har lämnat tryckgivarenheten och den inre lådan trycks uppåt av återställfjädrarna, att ackumulatortank, tryckmätare, strypventiler, övertrycksventil och tillhörande kopplingar och anslutningar är utförda som en andra modul, som är placerbar i en låda, som är fästbar vid en portstolpe e dyl, och att den sekundära öppningscylinder med sin hållare, fjäder och kraftarm kan bilda en tredje modul, som med fördel är monterbar på en befintlig stolpe för att manövrera en befintlig port.

11. Anordning enligt något av patentkraven 1-10, **kännetecknad därav, att** anordningen innefattar även tre stn mät-/avluftningspunkter (2), en manometer (5), en backventil (21), en tryckbegränsningsventil (23) och en manuell öppningsventil (25), att vid stängd port kolvstången i cylinder (D) är avsedd att vara uttryckt pga grundtryck i ackumulator (B) plus kraften från fjädern (V), att kolvstången i cylinder (A) är avsedd att vara uttryckt pga grundtryck i ackumulator (B), och att porten är avsedd att vara hydrauliskt låst via en pilotstyrd backventil (25).

12. Anordning enligt patentkravet 11, **kännetecknad därav, att** i och för manuell öppning ventilen (25) är avsedd att öppnas manuellt medelst en spak, så att vid portöppning vätska är avsedd att strömma dels via backventilen (21c) till minussidan på cylindern (D), dels pga utjämning av differentialarean till ackumulator (B), att efter manuell öppning porten är avsedd att stängas automatiskt pga att det råder samma tryck på båda sidor om kolven i cylindern (D), att kraften från fjädern (V) och areaskillnaden i cylinder (D) är avsedda att åstadkomma stängningen, och att vid manuell öppning den för automatisk stängning erforderliga kraften är avsedd att laddas.

13. Anordning enligt patentkraven 11 och 12, **kännetecknad därav, att** för automatisk öppning vid påkörning av cylinder (A) tryck och flöde är avsedda att passera via backventil (21a), att porten är avsedd att börja öppna via strypningen (Ha), att effekten är avsedd att laddas i ackumulator (C), samtidigt som tryck och flöde börjar avta via strypning (Hb), varvid strypningen (Ha) är dimensionerad så mycket större än (Hb), att helöppning av porten hinner ske och finns kvar en viss tid, innan avtappningen får effekt, och att samtidigt som porten öppnar, cylindern (D) går i

minusläge, varvid hydraulmediet på cylinderns plussida tillsammans med ackumulator (B) är avsett att fylla cylindern (A), att pilotventilen (25) härvid hålles öppen av trycket från minussidan, och att anordningen innefattar ett överbelastningsskydd genom att ventilen (23) är avsedd att öppna vid tryck över 10 bar, att upprepad belastning av cylindern (A) innan funktionscykeln slutförts är avsedd att leda till att överskottstryck och –vätska töms via ventilen (23).

Sammandrag

Uppfinningen avser en manöveranordning för en port (U) och med en i marken placerbar och med en hydraulisk cylinder (A) samt återställfjädrar (O) försedd tryckgivarenhet, som via ett hydrauliskt kretsloppssystem påverkar en öppnings- och stängningsmekanism för nämnda port. Enligt uppfinningen är nämnda cylinder (A) utformad som primär tryckcylinder, som hydraulmässigt är förbunden med dels en ackumulatortank (C) för ackumulering av en del av kraften som övertryck, och dels en sekundär öppningscylinder (D) för öppnande av porten (U) mot kraften av en stängningsfjäder (V). Övertrycket i vätskan släpps ut via en ledning till en expansionstank (B) via en strypventil (G) för fördröjande av utsläppningsförloppet, så att det får effekt först efter det att en bil har passerat anordningen och porten och övertrycket i expansionstanken börjat minska. Trycktoppar från mycket tunga bilar resp andra och tredje axeln på bilen släpps direkt via en övertrycksventil (I) tillbaka till expansionstanken.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

Gotapatent AB
H. Siebmanns
Box 154
S-561 22 HUSKVARNA

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	21-09-2000
Applicant's or agent's file reference: B153-006/PC	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No.: PCT/SE00/01249	International filing date *(day/month/year)*: 14-06-2000
Applicant: Potthoff, Klaus	

1. [X] The applicant is hereby notified that the international search report has been established and is transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report: however, for more details, see the notes on the accompanying sheet.

   Where? To the International Bureau of WIPO
   34, chemin des Colombettes
   1211 Geneva 20, Switzerland
   Facsimile No.: (41-22) 740.14.35

   For more detailed instructions, see notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
   - [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
   - [ ] no decision has been made yet on the protest: the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

   Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

   Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/	Authorized officer
Patent- och registreringsverket, Box 5055, S-102 42 STOCKHOLM — Telex 17978 PATOREG-S	**Inger Nilsson**
Facsimile No. 08-667 72 88	Telephone No. 08-782 25 00

Form PCT/ISA/220 (January 1994)

(See notes on accompanying sheet)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference B153-006/PC	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/SE 00/01249	International filing date *(day/month/year)* 14 June 2000	(Earliest) Priority Date *(day/month/year)* 14 June 1999
Applicant Potthoff, Klaus		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [ ] **Certain claims were found unsearchable** (See Box I).

2. [ ] **Unity of invention is lacking** (See Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
   - [ ] filed with the international application.
   - [ ] furnished by the applicant separately from the international application,
     - [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
   - [ ] transcribed by this Authority.

4. With regard to the **title**,
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:
   Figure No. 3
   - [ ] as suggested by the applicant.
   - [X] because the applicant failed to suggest a figure.
   - [ ] because this figure better characterizes the invention.
   - [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01249

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E05F 13/00, E05F 13/04
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: E05F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4115954 A (M.E. LARKIN ET AL), 26 Sept 1978 (26.09.78) --	
A	GB 2322669 A (T.G. GRANT), 2 Sept 1998 (02.09.98) --	
A	EP 0571305 A1 (L'EQUIPMENT ROUTIER), 24 November 1993 (24.11.93) --	
A	FR 2765921 A1 (COURRIER, J.P.), 15 January 1999 (15.01.99) --	

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" erlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 Sept 2000	21 -09- 2000
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Christer Wendenius / MRo Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01249

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2073589 A (DÖRNEMANN, C. ET AL), 1 October 1971 (01.10.71) -- --------	

INTERNATIONAL SEARCH REPORT
Information on patent family members

08/05/00

International application No.
PCT/SE 00/01249

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4115954 A	26/09/78	NONE	
GB 2322669 A	02/09/98	AU 4214097 A	26/03/98
		EP 0935821 A	18/08/99
		GB 9702428 D	00/00/00
EP 0571305 A1	24/11/93	FR 2691182 A,B	19/11/93
FR 2765921 A1	15/01/99	NONE	
FR 2073589 A	01/10/71	DE 1961391 A,C	16/06/71

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

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21 December 2000 (21.12.2000)

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(10) International Publication Number
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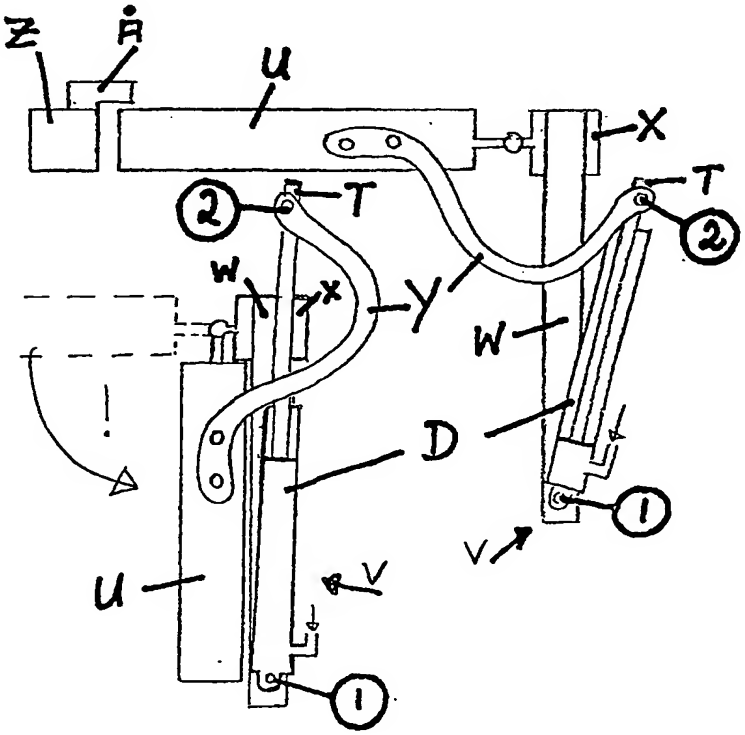
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: APPARATUS FOR OPERATING GATES AND THE LIKE



(57) Abstract: The invention relates to an apparatus for operating a gate (U), which apparatus is provided with a pressure generating unit, which can be mounted in the ground and which is provided with a hydraulic cylinder (A) as well as restoring springs (O) and which by means of a hydraulic circuit system actuates an opening and closing mechanism for said gate. According to the invention said cylinder (A) is designed as a primary compression cylinder, which hydraulically is connected partly to an accumulator tank (C), to accumulate a portion of the force as an overpressure, and partly to a secondary opening cylinder (D), to open the gate (U) against the force of a closing valve (V). The overpressure in the liquid is released through a duct to an expansion tank (B) through a check valve (G) in order to delay the discharge process, an effect being obtained only after the fact, that a car has passed the apparatus and the gate and that the overpressure in the expansion tank has started to decrease. Pressure peaks from very heavy cars and a second and a third axle on a car respectively will be released directly through an overpressure valve (I) back into the expansion tank.

WO 00/77334 A1

APPARATUS FOR OPERATING GATES AND THE LIKE

The present invention relates to an apparatus for operating gates ~~defined in more detail in the preamble of claim 1~~.

Such operative apparatuses are primarily used in places without the use of electricity, e.g. used to open and close gates in fences, designed to protect wild animals and fences designed to mark off pasture land. These apparatuses are designed to, when a vehicle arrives to the immediate surroundings of a gate, on either side of the gate, automatically open the gate and after a certain time, when the vehicle has passed the gate opening, close the gate again.

Examples of already made proposals for such operative apparatuses are mentioned in GB-A-2 322 669, US-A-4 115 954 and AU-A1-65 309/80.

These known solutions have various drawbacks and consequently they have never had any impact on the market. None of these publications meets a substantial number of various requirements in combination, which is a prerequisite for a general applicability, since it is hardly defensible, to a larger extent than what is very exceptional, to have to repair, serve and replace such devices, which thus in combination must meet the following requirements:

Very far reaching but not completely maintenance-free; independent of the use of electricity, solar cells, engines, fuels, compressed air units etc; functioning in practically all climatic conditions, e.g. from –30°C to +60°C; absolutely reliable and having a very large life; an opening and a closing of the gate without requiring, that a person in the approaching and passing respectively vehicle must leave it; selective actuatability solely by vehicles, particularly cars and not by e.g. human beings, wild animals or cattle; faultless functioning in the case of e.g. small private cars and heavy trucks; without complicated and expensive special means easily adjustable opening, opening keeping and closing times; smooth closing processes; noiselessness; possibility of module construction for a simple production and mounting; mounting possibility on existing constructions, e.g. stakes, and using existing stakes.

The object of the present invention, particularly in the above-mentioned respect, is to in combination improve and develop the state of the art in this technical field.

This object is attained according to the present invention by designing an apparatus for operating gates and the like, according to the introduction, ~~mainly as set forth in the characterizing clause of~~

claim 1. Additional characterizing features and advantages of the invention are mentioned in the following description, reference being made to the enclosed drawings, which in a schematic and only non-limiting, exemplifying way show a preferred embodiment of the invention. The drawings show in detail in :

Fig 1 a lateral view of a pressure generating unit in an apparatus for operating gates and the like according to the invention, which unit is actuated by an approaching private car;

Fig 2 a lateral view of a pivoting mechanism in the apparatus according to the invention;

Fig 3 the mechanism according to Fig 2, seen from above;

Fig 4 a schematic diagram for a hydraulic circuit in the apparatus according to the invention;

Fig 5 a perspective view from above of a preferred embodiment of an apparatus for operating gates and the like according to the invention;

Fig 6 a perspective view of a detail shown in Fig 5; and

Fig 7 an alternative schematic diagram, similar to the one shown in Fig 4.

It is principally feasible to design an apparatus according to the invention in such a way, that the gate, which also can comprise two halves, always will be opened horizontally away from an approaching vehicle, regardless of from which side it arrives, but in this specification only the more practical case is described of a gate, which can be moved against a stop in or beside the gate opening and consequently always is opened and closed in the same direction, e.g. with the opening movement towards an enclosed area. If wild animals or cattle are pressing against the gate, then the stop will prevent it from being opened.

Also, it is of course feasible to open the gate or the gate parts vertically and/or to use weight mechanisms.

Furthermore, it is feasible to let the apparatus according to the invention include a lock device, which locks the gate in its closing position but which unlocks it in an initial phase of the opening movement, e.g. by including a lock plunger in said hydraulic circuit.

In Fig 1 a pressure generating unit is shown, which normally is disposed at each side of a gate U on and/or in the ground. This unit comprises a stationary exterior box M having spider legs N, which provide increased stability, because they are fastened to the ground by means of holding-down bolts or the like. Inside the upwardly open exterior box an inverted, vertically movable interior box P is telescopically disposed, compression springs O extending between the bottoms of the two boxes. Also, one or several hydraulic compression cylinders A extend between the bottoms of the two boxes, which cylinders contain an anti-freezing liquid, e.g. water or glycol, which without problems

functions between –30°C and +60°C. Said hydraulic cylinders can be fastened to the bottom of the stationary box, whereas their pistons can be pressed against the interior side of the bottom of the movable box, thresholds S being provided on the upper side of the bottom of the movable box, which detect and establish the driving position of a car. Ramp plates Q, which are flexibly fastened to e.g. the upper/interior box close to its bottom, can constitute a guide to said upper side.

The hydraulic circuit will now be explained, reference being made to Fig 4. When eg the right front wheel of a car runs over a pressure generating unit, a pressure against cylinders A is exerted due to the weight of the car against the action of restoring springs O, which pressure is sufficient to press a hydraulic liquid through e.g. maintenance-free plastic pipes partly to an accumulator tank C, which accumulates some of the force as an overpressure, and partly to a secondary opening cylinder D, which by its piston stem T opens gate U against the action of the force of a closing spring V. The overpressure in the liquid is immediately released through a tube to an expansion tank B. The discharge takes place through a check valve G and is so slow, that it produces an effect only after the passage of the car and the start of the reduction of the overpressure in the expansion tank. A check valve H, mounted in the duct to opening cylinder D, provides a gentle opening of the gate and guarantees, that the pressure liquid excess flows to accumulator tank C.

Possible pressure peaks from very heavy cars and a second and a third axle respectively of the car are released directly through a overpressure valve I back to the expansion tank. However, since this valve only is opened at 10 bars, it does not obstruct the ordinary opening process and the ordinary slow closing but only handle possible overpressures, e.g. from several axles or heavy vehicles, which otherwise would break the system.

The ordinary operative pressure in the system is 5-6 bars, which causes the gate to be fully opened against the force of closing spring V.

Secondary opening cylinder D is mounted on a holder W, which in its turn is mounted on e.g. an existing fencing stake X in a pivoting way, which results in, that it during the opening and the closing process respectively by itself finds the correct angle in relation to a power arm Y. Cylinder D lies in a plane above holder W and power arm Y lies in its turn in a plane above cylinder D, which results in, that the opening cylinder is allowed to move freely in relation to holder W, whereas the power arm is allowed to move freely in relation to opening cylinder D. Power arm Y suitably is shaped like a boomerang in order to not collide with stake X. It extends around the stake, which also facilitates the mounting.

Gate U is closed against the other existing stake Z with a contact surface or stop Å. When the gate has been opened and the car has left the pressure generating unit, springs O press back the interior box to its upper starting position. By that means a negative pressure is obtained in the primary pressure cylinder, which consequently draws back liquid from the expansion tank. In this way the primary cylinder is ready to start the entire cycle again. In the secondary cylinder the pressure is reduced, since liquid is released back to the expansion tank through a check valve G. In this way the closing spring starts functioning and closes the gate slowly, since liquid must be pressed out of the secondary opening cylinder and through the check valve back to the accumulator tank.

In Fig 4 an aerator L is also shown in the duct branch to accumulator tank C, an aerator M in the duct branch to opening cylinder D, check valves E and F in two duct branches from the pressure side of pressure cylinder A, a manometer J, connected after sheet valve F in the branch, and an aerator K, connected to the same branch.

The entire pressure generating unit preferably is enclosed. The enclosure can downwards comprise a reinforced plastic fabric, which allows it to be simply spread out instead of using a substantially more expensive injection molded box of a suitable age resistant plastic material, which of course also is a possibility. Upwards the pressure generating unit can be covered with a steel mat-reinforced rubber mat, which partly will seal against moisture and dirt and partly tolerate tens of thousands of car runs.

The exterior rigid metallic box is provided with four spider legs, which have holes in their outermost corners. Long bolts are inserted through these holes and fastened to the primary rock or long screws, which are fastened in plugs or the like in softer ground.

Since the force, when the non-rigid interior metallic box is run over by a car, partly comprises a straight downwardly directed component and partly a component in the direction of travel of the car and forwardly directed parallel to the ground, it is important to eliminate the last-mentioned distortion force, which primarily runs the risk of throwing off the non-rigid box.

One way of solving this problem is the following: The non-rigid box is provided with a number of cylinder bearings, which solely allow a vertical movement in the interior of the rigid box. Alternatively, ball bearings can be chosen or simply Teflon-coated surfaces, which however may result in fouling and seizure problems, or expander rails. Thanks to the chosen solution the entire active force from the car is converted into a vertical direction, a maximal power yield being obtained designed to influence the hydraulic system.

A particular advantage of the design, shown in Figs 5 and 6, is obtained, since the pressing downwards of the interior box, already when the access ramp, which has been movably inserted into the box, is hit by the car, is facilitated. The ramp is fastened in the pressure indicator unit in such a way, that the fastening of it against the non-rigid box remains at the same point, seen in the direction of travel of the car, whereas the end of the ramp moves a small distance backwards seen in the direction of travel of the car, since the non-rigid box is pressed downwards and the ramp will be positioned more parallel to the ground.

The pressure generating unit is conveniently made as a first module, which through two plastic hoses partly transfers the operative pressure to the secondary opening cylinder and partly brings back hydraulic liquid from the expansion tank to the primary compression cylinder, when negative pressure occurs in it, when the car has left the pressure generating unit and the interior box is pressed upwards by the restoring springs.

The accumulator tank, the pressure meter, the check valves, the overpressure valve and ancillary connections and attachments are conveniently made as a second module, which can be placed in a box (not shown), which can be fastened to a gate stake or the like.

The secondary opening cylinder with its holder, spring and power arm can finally form a third module, which preferably is mounted on an existing stake in order to handle an existing gate, substantial cost savings being attained.

The modules can be assembled in a factory and finished, filled with e.g. glycol for application areas, where frost may occur. Otherwise water will be adequate. The modules are connected to each other and air is discharged through aeration nipples. Subsequently the pressure generating unit is installed in the ground and the entire apparatus is ready to be used.

In the diagram shown in Fig 7, besides the symbols already described, symbol 2 represents three measuring/aeration (venting) points, 5 a manometer, 21 three check valves, 23 a pressure limiting valve and 25 a manual opening valve.

This apparatus functions in the following fashion and arbitrary details can of course be used on the apparatus described above and shown in the other figures:

1. Closed Gate

The piston stem in cylinder D is activated by the basic pressure in accumulator B plus the force of spring V. The piston stem in cylinder A is activated by the basic pressure in accumulator B. The gate is hydraulically locked through valve 25, which is a pilot-controlled check valve.

2. Manual Opening

Valve 25 can be opened manually by means of a bar. Liquid flows, when the gate is opened, partly through check valve 21a to the negative side of cylinder D and partly due to an equalization of the differential area of accumulator B. (The difference area is the difference of the area due to the fact, that the piston stem occupies an area of the negative side). Subsequent to a manual opening the gate is closed automatically, since there is the same pressure on both sides of the piston in cylinder D, but it is the force of spring V and the area difference in cylinder D, which causes the closing. By a manual opening the force is charged, which is needed for an automatic closing. Thus, the manual opening can be repeated an arbitrary number of times.

3. Automatic Opening

When cylinder A is run over by a car, the pressure and the flow are forwarded through check valve 21a. The gate starts to open due to choking Ha. This effect is loaded into accumulator C. Simultaneously pressure and flow starts to decrease through choking Hb. It is to be noted, that Ha is much larger than Hb, why a complete opening of the gate has time to occur and will remain for a certain time, before the discharge will produce an effect. At the same time as the gate opens, cylinder D will have a negative position (the piston stem is withdrawn), the hydraulic medium on the positive side of the cylinder jointly with accumulator B filling cylinder A. pilot-valve 25 is then kept open by the pressure of the negative side.

4. Overload Protection

Valve 23 opens at a pressure above 10 bars. Thus, a repeated load on cylinder A, before the operative cycle has been concluded, results in, that the excess pressure and liquid will be emptied through valve 23. Compared to the construction shown and described above an automatic hydraulic locking of the gate is now obtained. Instead of (or possibly in addition to) a spring the hydraulic pressure, which is generated in the ramp, is used. In addition to that, a single hydraulic duct between the gate and the ramp is sufficient.

The present invention is not limited to the embodiments described above and shown in the enclosed drawings, but it can be modified and supplemented in an arbitrary way within the scope of the inventive idea and the following claims. Thus, the apparatus can, as has already been mentioned, be used in connection with a pivotally suspended revolving gate, or a gate, which slides in rails in a straight or bent path. Instead of gates containers can also be contemplated, the contents of which will be emptied on e.g. a truck platform. By utilizing the driving and the weight of a car it is advantageous to use the described and shown apparatus in order to carry out an opening, closing, loading, discharging or the like movement, which otherwise only can be carried out in an engine-driven or manual way.

CLAIMS

1. An apparatus for operating one or several gates or the like (U), comprising a pressure generating unit, which can be mounted in or on the ground and is provided with restoring springs (O) and is designed, by a hydraulic circuit system, to actuate an opening and closing mechanism for a gate or the like, **characterized in that** said cylinder (A) is designed as a primary compression cylinder, which is hydraulically connected to partly an accumulator tank (C), which is designed to accumulate a portion of the force as an overpressure, and partly a secondary opening cylinder (D), which is designed to open the gate (U) against the force of a closing spring (V), in that the overpressure in the liquid is to be released through a duct to an expansion tank (B) through a check valve (H), which is designed to delay the discharge process in such a way, that it will have an effect only subsequent to the passage of e.g. a car past the apparatus and the gate and to the start of the reduction of the overpressure in the expansion tank, and in that possible pressure peaks from very heavy cars and the second and the third axle respectively of a car are to be released directly through an overpressure valve (I) back to the expansion tank.

2. An apparatus according to claim 1, **characterized in that** the apparatus comprises a lock mechanism, which is designed to lock the gate in a closing position and to be inactivated in an initial phase by the opening movement, particularly by including a lock plunger in said hydraulic circuit.

3. An apparatus according to claim 1, **characterized in that** a pressure generating unit normally is mounted on each side of a gate (U) on and/or in the ground, and/or in that it comprises a stationary exterior box (M) having spider legs (N) , which provide improved stability by a fastening in the ground by means of fastening bolts or the like, in that inside the upwardly open exterior box an inverted vertically movable interior box (P) is telescopically mounted , compression springs (O) extending between the bottoms of the two boxes, and in that one or several hydraulic compression cylinders (A) extend between the bottoms of the boxes, which cylinders contain a frostless liquid, e.g. water and glycol, to make the unit operative between –30°C and +60°C.

4. A apparatus according to claim 3, **characterized in that** said hydraulic cylinders are fastened to the bottom of the stationary box, whereas their plunges are designed to be pressed against the inner side of the bottom of the movable box, thresholds (S) suitably being provided on the upper side of said bottom, said thresholds being designed to detect and establish a running over-position, and in that ramp plates (Q) are articulately fastened to e.g. the upper/interior box near its bottom, which ramp plates are to lead a car wheel to said upper side.

5. An apparatus according to any of claims 1-4, **c h a r a c t e r i z e d in that** the secondary opening cylinder (D) is mounted on a holder (W), which is its turn is mounted on e.g. an existing fencing stake (X) in a pivotable way in order to, during the opening and closing process respectively, itself find the right angle in relation to a force arm (Y), in that the cylinder (D) lies in a plane above the holder (W) and the force arm (Y) in its turn lies in a plane above the cylinder (D), the opening cylinder being able to freely move in relation to the holder (W), while the force arm is able to freely move in relation to the opening cylinder (D), and in that the force arm (Y) suitably is shaped like a boomerang in order not to collide with the stake (X), it being designed to pass round the stake in order to also facilitate. the mounting.

6. An apparatus according to any of claims 3-5, **c h a r a c t e r i z e d in that** the gate (U) is designed to be closed against the second existing stake (Z) having a contact surface or stop (Å), in such a way, that, when the gate has been opened and e.g. a car has left the pressure indicator unit, the springs (O) will press the interior box back to its upper starting position and create an underpressure in the primary compression cycle, which will draw back liquid from the expansion tank in such a way, that the primary cylinder will be ready to start the entire operative cycle again and in the secondary cylinder the pressure will be reduced , since liquid will return to the expansion tank through the check valve (G), the closing spring being able to function and close the gate slowly, since liquid will be pressed out of the secondary opening cylinder and through the check valve back to the accumulator tank .

7. An apparatus according to any of claims 1-6, **c h a r a c t e r i z e d by** an aerator (L) in the duct branch to the accumulator tank (C), an aerator (M) in the duct branch to the opening cylinder (D), check valves (E and F) in two duct branches from the pressure side of the compression cylinder (A), a manometer (J) connected after the check valve (F) in the branch, and an aerator (K) connected to the same branch.

8. An apparatus according to any of claims 3-7, **c h a r a c t e r i z e d in that** the entire pressure generating unit is enclosed, the enclosure downwards being made of a reinforced plastic fabric in order to be able to simply spread it out, and the pressure generating unit upwards being covered by a steel net-reinforced rubber mat in order to partly seal against moisture and dirt and to partly withstand tens of thousands of approaching and leaving runs of cars and/or in that the exterior rigid metal box in provided with four spider legs, which have holes in their outermost corners, through which holes long bolts will be inserted, which will be fastened in the ground, or long screws, which will be fastened in plugs or the like in looser ground.

9. An apparatus according to any of claims 3-8, **characterized in that** the movable box is provided with a number of roller bearings, which solely allow vertical movements within the rigid box, or ball bearings or simply Teflon-coated surfaces, and/or in that the pressing downwards of the interior box will be facilitated by a run by a car on the ramp, one end of which is movably inserted into the box, which ramp is fastened in such a way, that its fastening to the loose box remains at the same point, seen in the direction of travel of the car, whereas the other end of the ramp moves a short distance backwards in relation to the direction of travel of the car, the loose box being pressed downwards and the ramp lying more parallel to the ground.

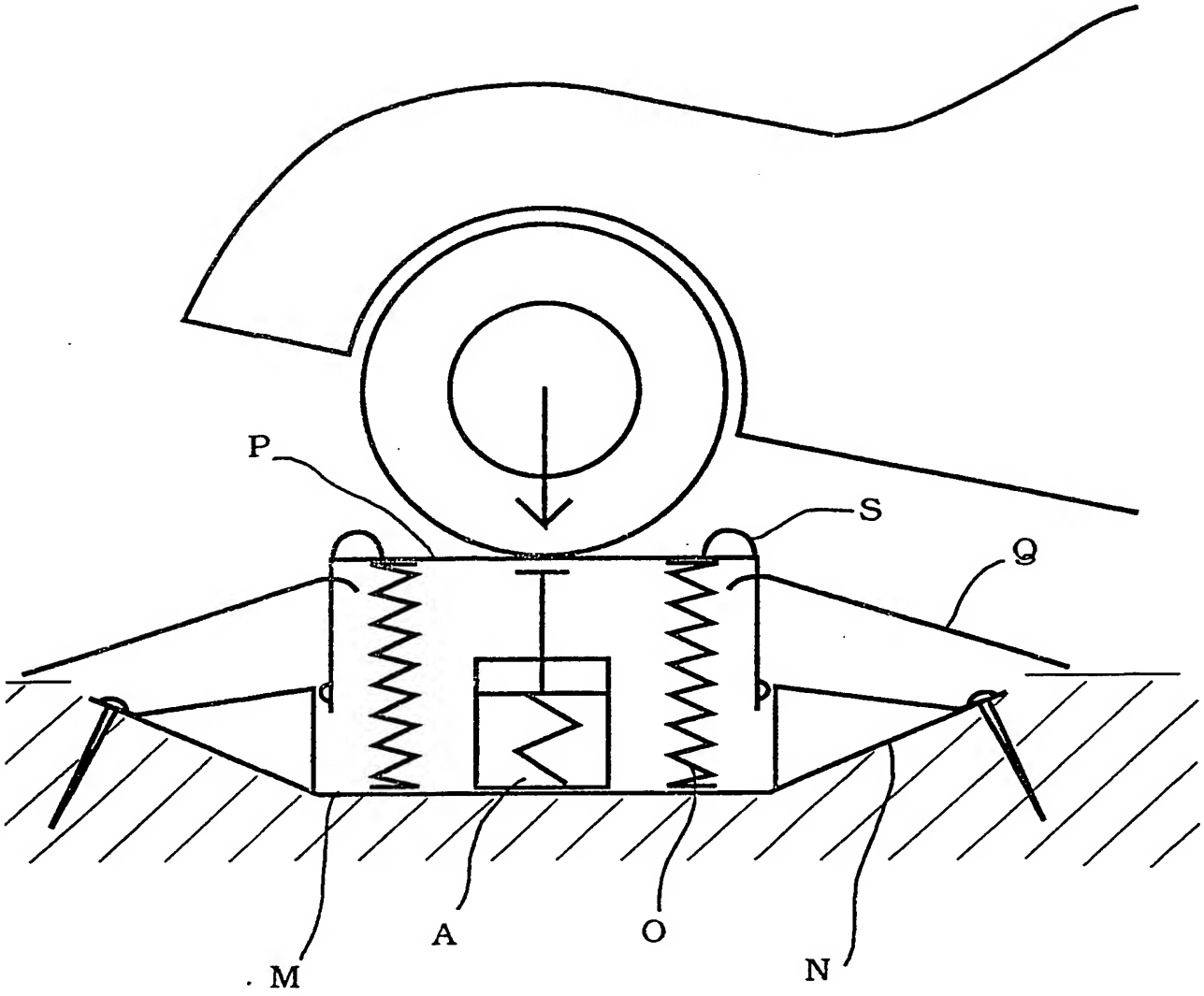
10. An apparatus according to any of claims 1-9, **characterized in that** the pressure generating unit is manufactured as a first module, which by means of two plastic hoses partly transfers the operative pressure to the secondary opening cylinder and partly returns hydraulic liquid from the expansion tank to the primary compression cylinder, when an underpressure occurs in it, when a car has left the pressure generating unit and the interior box is pressed upwards by the restoring springs, in that the accumulator tank, the pressure meters, the check valves, the overpressure valve and their connections and attachments are manufactured as a second module, which can be placed in a box, which can be fastened to a gate stake or the like, and in that the secondary opening cylinder with its holder, valve and power arm is manufactured as a third module, which preferably will be mounted on an existing stake in order to handle an existing gate.

11. An apparatus according to any of claims 1-10, **characterized in that** the apparatus also comprises three measure/aeration points (2), a manometer (5), a check valve (21), a pressure limiting valve (23) and a manual opening valve (25), in that, when the gate is closed, the piston stem in the cylinder (D) will be actuated by the basic pressure in the accumulator (B), plus the force of spring (V), in that the piston stem (A) will be actuated by the basic pressure in the accumulator (B), and in that the gate will be hydraulically locked through a pilot-guided check valve (25).

12. An apparatus according to claim 11, **characterized in that** in order to carry out a manual opening the valve (25) will be opened manually by means of a bar in such a way, that, when the gate is opened, liquid will flow partly through the check valve (21c) to the negative side of the cylinder (D) and partly because of an equalization of the differential area to the accumulator (B), in that after a manual opening of the gate the gate will be closed automatically , because the same pressure exists on both sides of the piston in the cylinder (D), in that the force of the spring (V) and the area difference in the cylinder (D) will result in the closing, and in that, when a manual opening is carried out, the force, required for an automatic closing, will be loaded.

13. An apparatus according to claims 11 and 12, **c h a r a c t e r i z e d in that** for an automatic opening, when the cylinder (A) is run over by a car, pressure and flow will pass through the check valve (21a), in that the gate will start its opening through the choking (Ha), in that the effect will be loaded into the accumulator (C), at the same time as pressure and flow start decreasing through the choking (Hb), the choking (Ha) having a dimension so much larger than (Hb), that a complete opening of the gate will have time to occur and will remain for a certain time, before the discharge will have an effect, and in that at the same time as the gate is opened, the cylinder (D) will enter into a negative position, the hydraulic medium on the positive side of the cylinder jointly with the accumulator (B) being designed to fill the cylinder (A), in that the pilot valve (25) then is kept open by the pressure from the negative side, in that the apparatus also comprises an overload protection, since the valve (23) will be opened at a pressure above 10 bars, and in that a repeated load on the cylinder (A), before the operative cycle has been concluded, will result in, that the overpressure and the excess liquid will be emptied through the valve (23).

Fig. 1



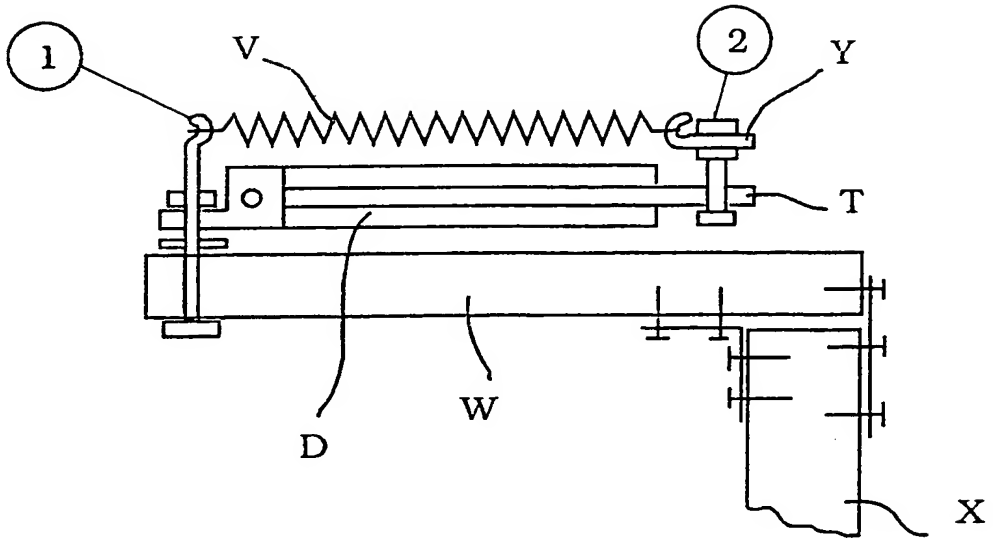


Fig 2

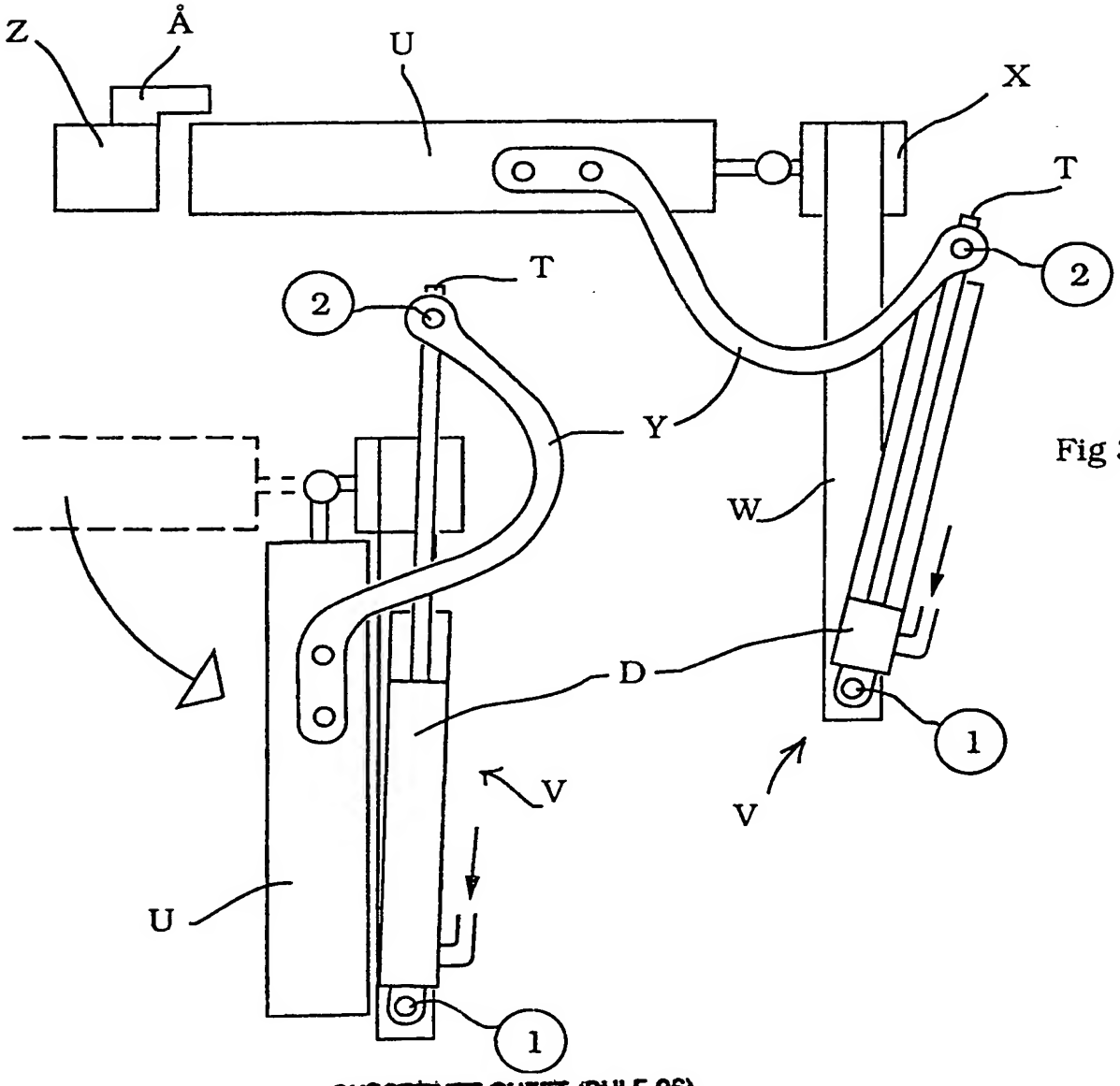


Fig 3

Fig 4

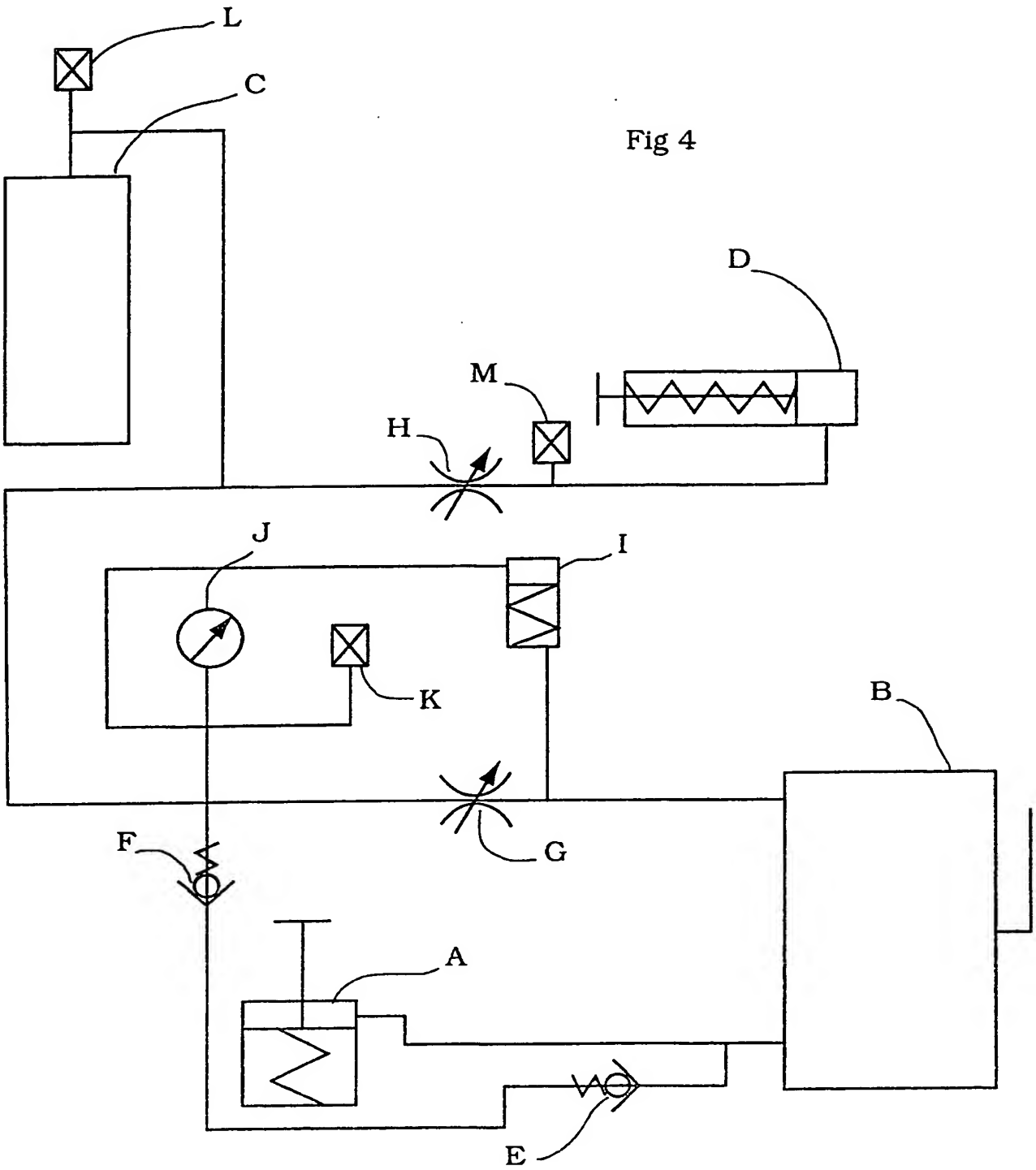


Fig 5

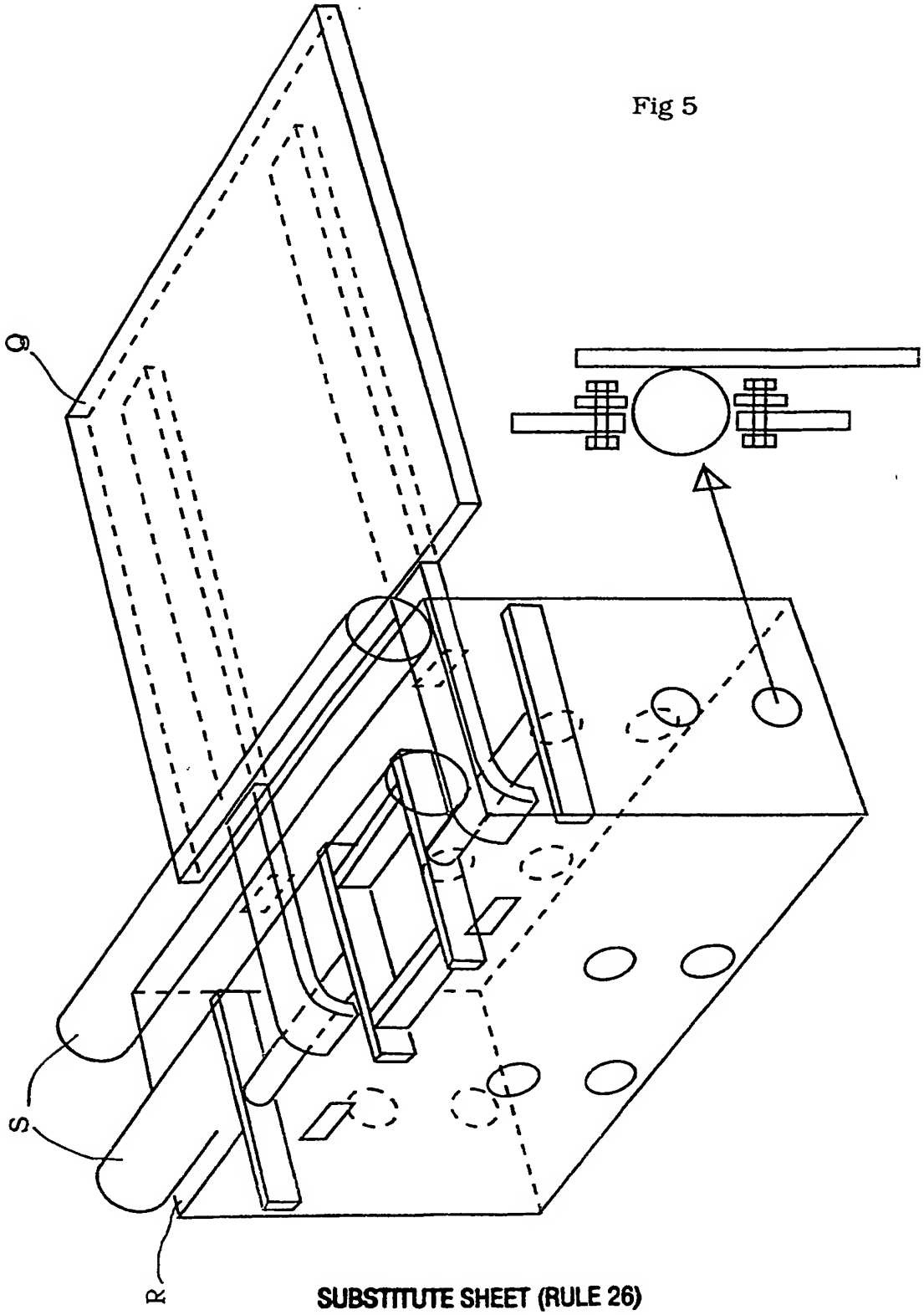
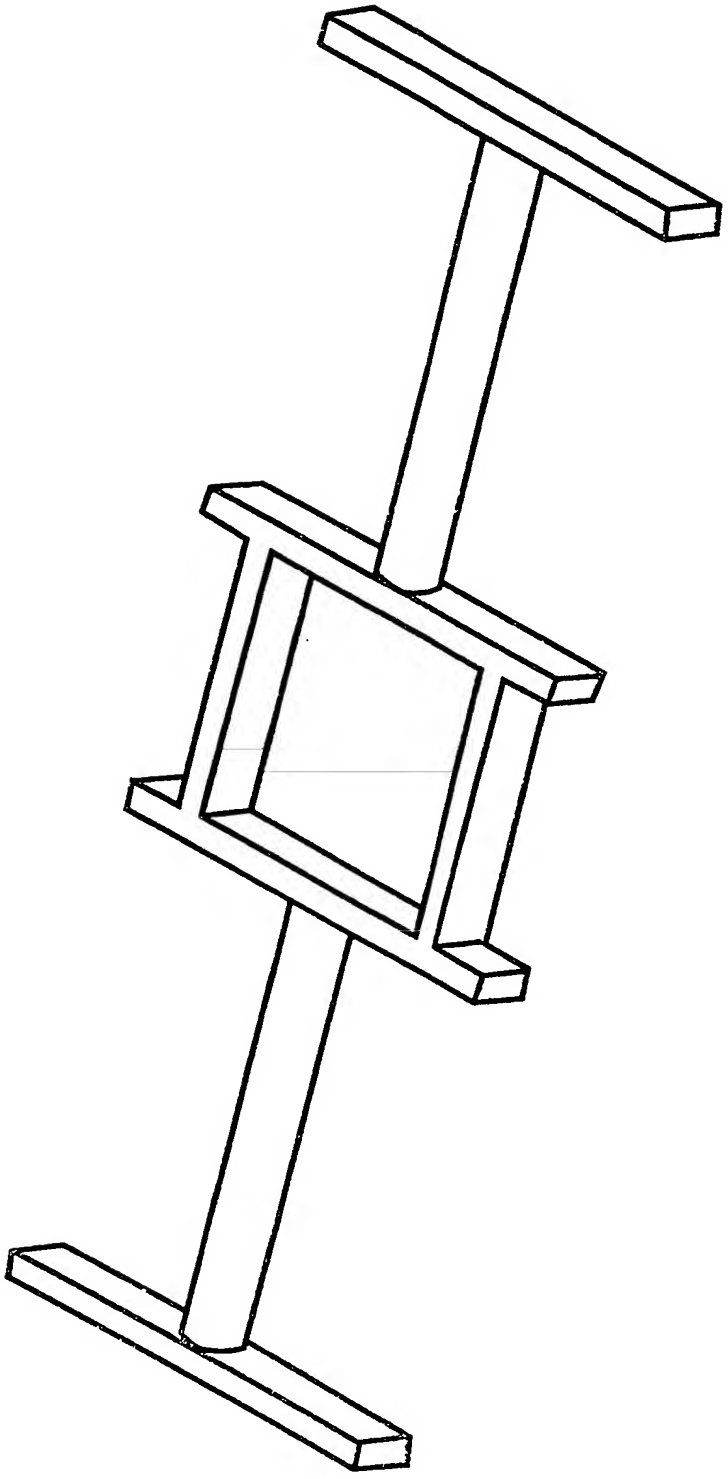


Fig 6



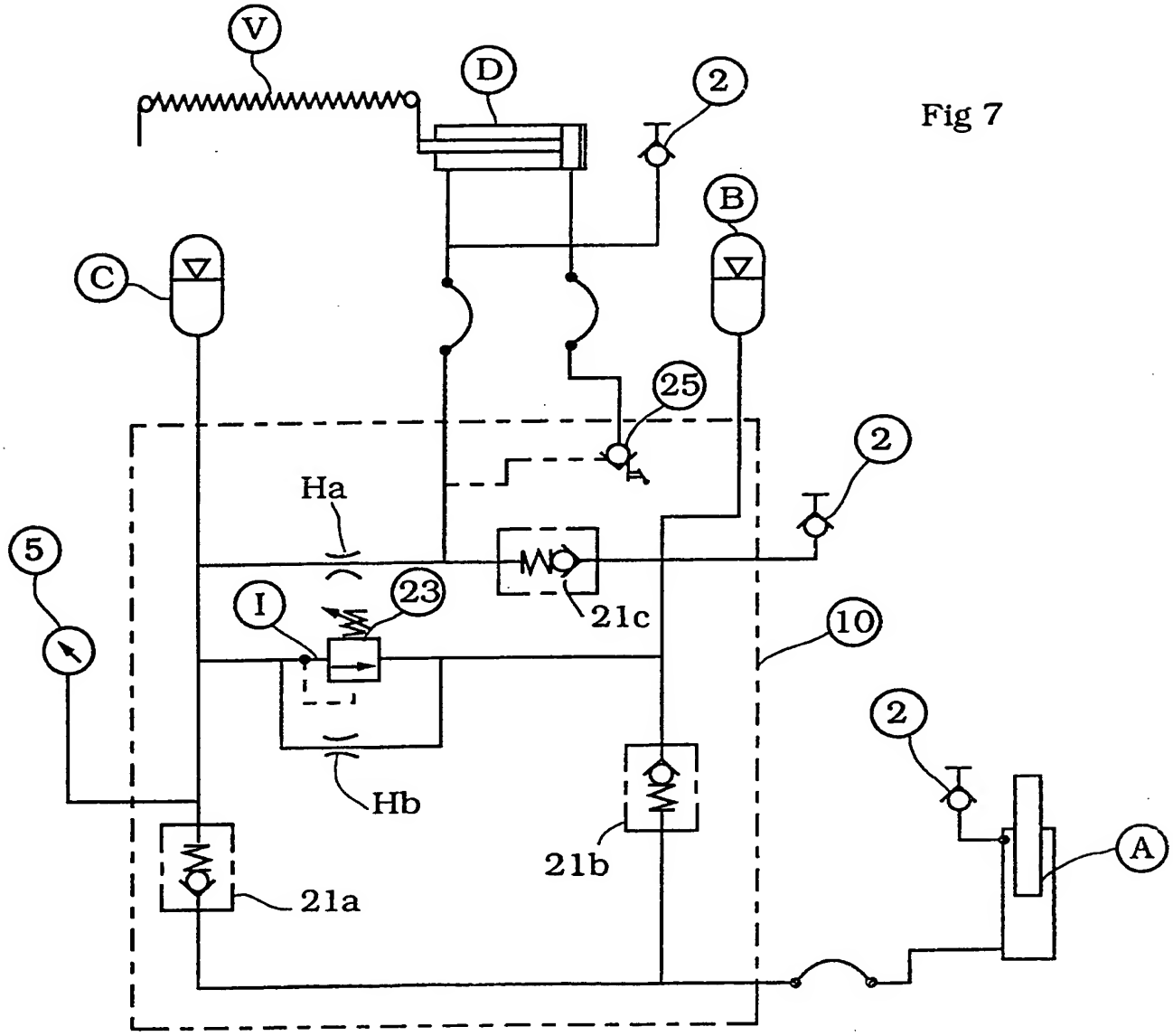


Fig 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01249

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: E05F 13/00, E05F 13/04
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: E05F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4115954 A (M.E. LARKIN ET AL), 26 Sept 1978 (26.09.78) --	
A	GB 2322669 A (T.G. GRANT), 2 Sept 1998 (02.09.98) --	
A	EP 0571305 A1 (L'EQUIPMENT ROUTIER), 24 November 1993 (24.11.93) --	
A	FR 2765921 A1 (COURRIER, J.P.), 15 January 1999 (15.01.99) --	

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" erlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 Sept 2000	21 -09- 2000
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Christer Wendenius / MRo Telephone No. +46 8 782 25 00

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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2073589 A (DÖRNEMANN, C. ET AL), 1 October 1971 (01.10.71) -- --------	

INTERNATIONAL SEARCH REPORT

Information on patent family members

08/05/00

International application No.
PCT/SE 00/01249

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4115954 A	26/09/78	NONE	
GB 2322669 A	02/09/98	AU 4214097 A	26/03/98
		EP 0935821 A	18/08/99
		GB 9702428 D	00/00/00
EP 0571305 A1	24/11/93	FR 2691182 A,B	19/11/93
FR 2765921 A1	15/01/99	NONE	
FR 2073589 A	01/10/71	DE 1961391 A,C	16/06/71